QuantorVet+

# User Manual *Veterinary*

## Acquisition and diagnostic software

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3DISC IMAGING

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## Warnings and used symbols

To ensure the safety of patients, staff and other persons, any changes to software and hardware delivered by ***3D Imaging & Simulations Corp.*** may only be made with prior written permission from ***3D Imaging & Simulations Corp.***

Please read the respective manuals of the connected devices, such as of the X-ray generator, sensor, or reader, before starting to use the system***.***

The following symbols will be used throughout this manual:

**DANGER**

General prohibition indication.

The functionality of the system can be destroyed in the case of incorrect use.

If unauthorized changes have been made to delivered software and hardware components, the warranty by ***3D Imaging & Simulations Corp.*** becomes void. ***3D Imaging & Simulations Corp.*** will not accept any responsibility or liability for the proper functioning oh the product in such a case.

**DANGER**

General mandatory action manual.

The functionality of the system can be destroyed in the case of incorrect use.

If unauthorized changes have been made to delivered system and accessories, the warranty by ***3D Imaging & Simulations Corp.*** becomes void. ***3D Imaging & Simulations Corp.*** will not accept any responsibility or liability for the improper functioning of the product in such a case.

**WARNING**

The functionality of the system can be limited in the case of incorrect use. Hints that require special attention.

**NOTE**

Notes represent information that is important to know but which do not affect the functionality of the system.

## Medical Device Security

Users must take steps to secure their networks and protect their Medical Information Systems which includes a risk assessment strategy, network defense in depth strategy, business continuity planning, etc.

- ✓ User Authentication
  Only authorized users should log on to computers on which medical information systems are installed.

- ✓ Password Security
  In today's world, passwords can be compromised in literally seconds by using a wide variety of tools and techniques. To lower the possibility of a compromised password, it is vital to adhere to a set of protocols.
  - Choose a password between 7 ~ 10 characters using both alpha and numeric characters.
  - Do not share the password.
  - Do not base the password on a pet's name, a relative's name or any dictionary word.
  - Do not write down the password.
  - Do not leave the account logged on.

- ✓ User Access Control
  Configure the workstation to prompt for logon after coming out of stand-by mode.

- ✓ Internet Usage
  Accessing to the Internet exposes the computer to a plethora of vulnerabilities such as:
  - Viruses
  - Spyware
  - Trojans
  - Hostile Codes

  It is not recommended to install any unauthorized software on the computer. Peer-to-peer software can expose your entire hard drive to any individual running the same type of software.

- ✓ Antivirus Products
  Use of antivirus software can increase CPU and memory usage, which can cause a slight degradation in the performance of the system. However, functionality should not be affected.

- ✓ Physical Security
  It is recommended that the user employs some method of physical security when dealing with the system to ensure that only authorized personnel have access to the product.

There are several vulnerabilities a malicious user could exploit locally. Some examples are:

- Theft of equipment
- Local password cracking
- Installation of hardware key loggers

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# 1. Introduction

***QuantorVet+*** is intuitive, easy-to-use workstation software that provides facilities using ***3D Imaging & Simulations Corp.*** CR readers with optimized image acquisition, processing, and management capabilities. Its DICOM compliant interface allows for simple integration into a facility's HIS, RIS, and PACS, providing the full range of capabilities needed for improved productivity and workflow in busy clinics and practices.

This user manual provides detailed information about the operation of ***QuantorVet+*** and the use of the range of facilities included in the software to make the processing and administration of your medical X-ray images as efficient as possible.

## ***Safety Instruction***

To ensure the safety of patients, staff and other persons, any changes to software and hardware delivered by ***3D Imaging & Simulations Corp.*** may only be made with prior written permission from ***3D Imaging & Simulations Corp.***

## ***Liability***

If unauthorized changes have been made to delivered software and hardware components, the warranty by ***3D Imaging & Simulations Corp.*** becomes void. ***3D Imaging & Simulations Corp.*** will not accept any responsibility or liability for the improper functioning of the product in such a case.

## 1.1. *Main Features*

### ***Image Acquisition & Study Management***

***QuantorVet+*** Software allows facilities to quickly input patient data – or access it directly from their HIS, RIS or PACS for improved productivity and accuracy. Image acquisition is supported by a fully developed list of exams and anatomies, and a viewer displays images on a monitor to facilitate quality control and image management. Once completed, the study can be sent to the PACS, printed on a dry film printer, or burned onto a CD or DVD.

### ***Image Manipulation, Multi-Viewing & Stitching***

To optimize images, technicians can crop, etch, enhance, increase brightness and contrast, and perform other adjustments. Regions of interest can be highlighted, and users can easily change the order of images or delete images in the multi-view window. Stitching capabilities for images of legs, spines, and other anatomical areas are particularly useful for orthopedic and chiropractic facilities.

### ***Integrated Viewer***

For smaller facilities without a HIS, RIS or PACS, ***QuantorVet+***'s local database enables direct management of patients and studies utilizing a unique viewer function. Technicians and radiologists can review DICOM and non-DICOM images on the same station they acquired it on.

### ***Full Range of Output Options***

***QuantorVet+*** features a full range of output options, including DICOM CD-burn, embedded view, DICOM send SCU, and DICOM print for dry film printers. The combined DICOM Patient CD and dry film print creates patient CD / DVDs that include DICOM DIR structure and a built-in viewer.

# 2. Installation

## 2.1. Environment

### 2.1.1. Recommended Computer Requirement

| | |
|---|---|
| Operating System | Microsoft Windows 7, 8 |
| CPU | Intel CORE i5 |
| Memory | RAM 4 GB or more |
| Hard Disk | 500 GB Free Hard Disk Space |
| Network | 1 Gbps Ethernet |
| Video | 32-bit Color Display |
| Video Resolution | 1920 x 1080, 1440 x 900 |

### 2.1.2. Minimum Computer Requirement

| | |
|---|---|
| Operating System | Microsoft Windows 7 |
| CPU | Intel Processor |
| Memory | RAM 2 GB or more |
| Hard Disk | 80 GB Free Hard Disk Space |
| Network | 1 Gbps Ethernet |
| Video | 32-bit Color Display |
| Video Resolution | 1366 x 768, 1280 x 800, 1600 x 900, 1280 x 1024 |

## 2.2. *Installation*

### 2.2.1. *Software Installation*

- Log on to the PC using an administrator account.
- Connect USB Dongle to USB port.
- Insert Installation CD. Install program will automatically launch.
- If the install program is not launched automatically, find and execute the "***QuantorVet 2.x.x. Setup.exe***" file on the CD.

- Click the "Next" button as shown in Figure 2.1.

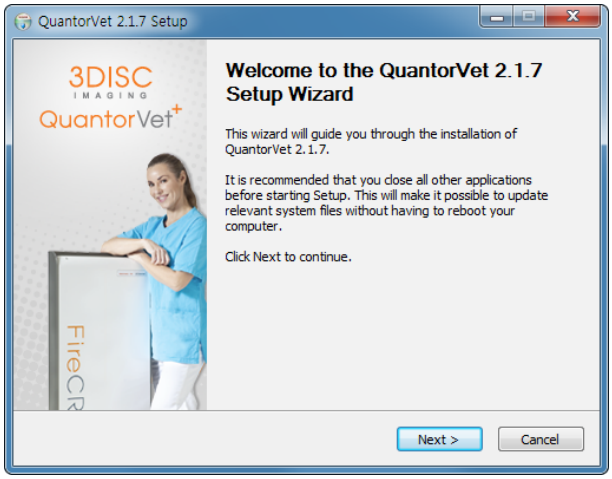

QuantorVet 2.1.7 Setup
3DISC IMAGING
QuantorVet+
Welcome to the QuantorVet 2.1.7 Setup Wizard
This wizard will guide you through the installation of QuantorVet 2.1.7.
It is recommended that you close all other applications before starting Setup. This will make it possible to update relevant system files without having to reboot your computer.
Click Next to continue.
Next >
Cancel

**Figure 2.1 Welcome Dialog Box**

- Choose all components and click the "Next" button as shown in Figure 2.2.

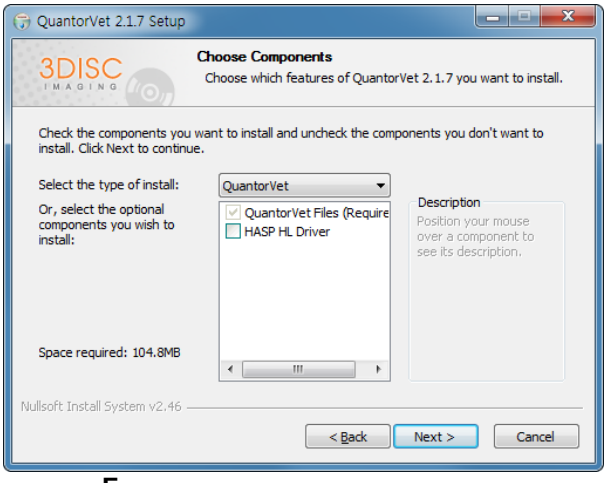

QuantorVet 2.1.7 Setup
3DISC IMAGING
Choose Components
Choose which features of QuantorVet 2.1.7 you want to install.
Check the components you want to install and uncheck the components you don't want to install. Click Next to continue.
Select the type of install:
QuantorVet
Or, select the optional components you wish to install:
QuantorVet Files (Require
HASP HL Driver
Description
Position your mouse over a component to see its description.
Space required: 104.8MB
Nullsoft Install System v2.46
< Back
Next >
Cancel

**Figure 2.2 Components Dialog Box**

- Choose your language and click the "Next" button as shown In Figure 2.3.

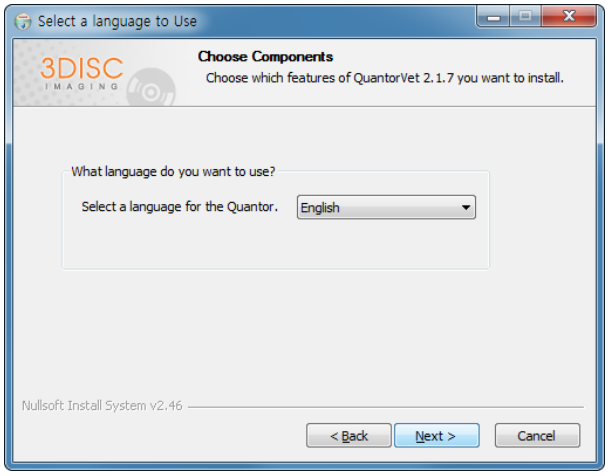

Select a language to Use
3DISC IMAGING
Choose Components
Choose which features of QuantorVet 2.1.7 you want to install.
What language do you want to use?
Select a language for the Quantor.
English
Nullsoft Install System v2.46
< Back
Next >
Cancel

**Figure 2.3 Components Dialog Box**

- Choose ***FireCR*** model and click the "Next" button as shown In Figure 2.4.

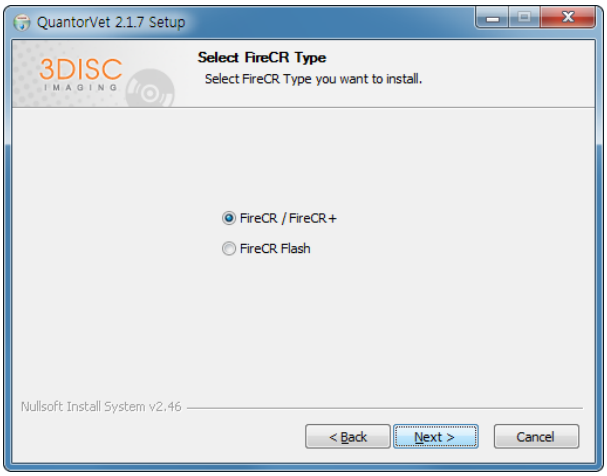



**Figure 2.4 *FireCR* Model Selection Dialog Box**

- Choose Reader Position and click the "Next" button as shown in **오류! 참조 원본을 찾을 수 없습니다.**

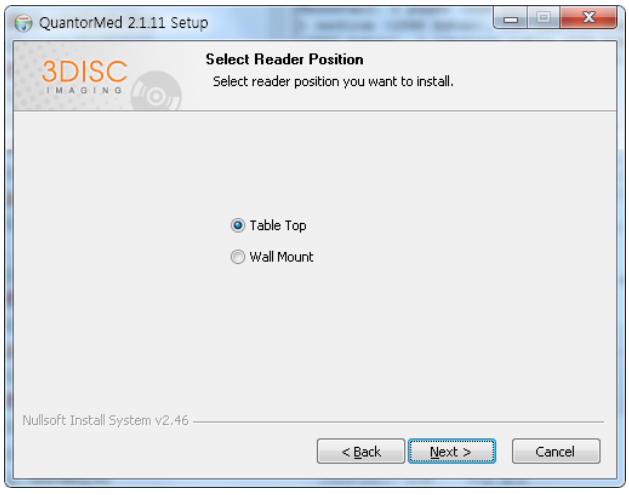



**Figure 2.5 Reader Position Selection Dialog Box**

- Choose the destination folder and click the "Install" button as shown in Figure 2.6.

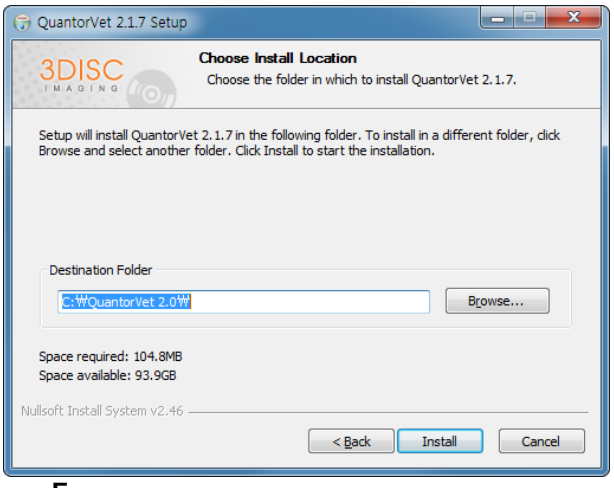

QuantorVet 2.1.7 Setup
3DISC
IMAGING
Choose Install Location
Choose the folder in which to install QuantorVet 2.1.7.
Setup will install QuantorVet 2.1.7 in the following folder. To install in a different folder, click Browse and select another folder. Click Install to start the installation.
Destination Folder
C:₩QuantorVet 2.0₩
Browse...
Space required: 104.8MB
Space available: 93.9GB
Nullsoft Install System v2.46
< Back
Install
Cancel

**Figure 2.6 Installation Location Dialog Box**

- Installation status will be displayed as shown in Figure 2.7.

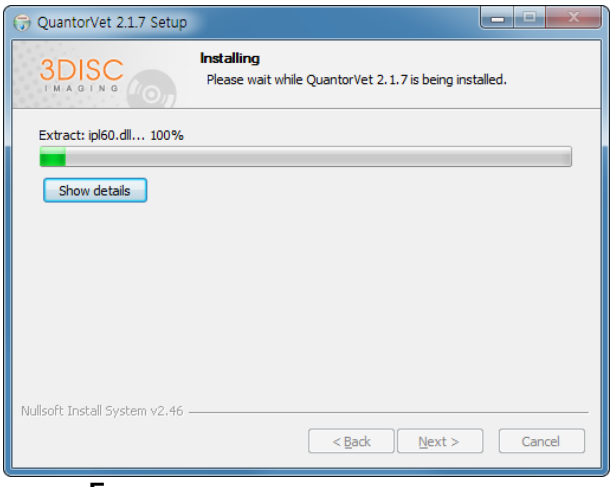



**Figure 2.7 Install Status Dialog Box**

- Installation status of the Dongle Driver will be displayed as Shown in Figure 2.8

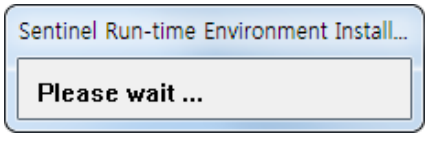



**Figure 2.8 Installation of dongle Driver**

- Installation status of the ***FireCR*** USB driver will be displayed as Shown in Figure 2.9

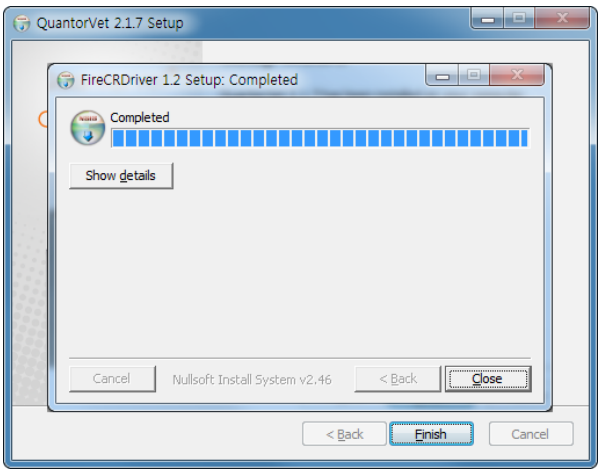



**Figure 2.9 Installation of *FireCR* USB Driver**

- If installation is successful, Figure 2.10 will show up. Click "Finish" to finish the installation.

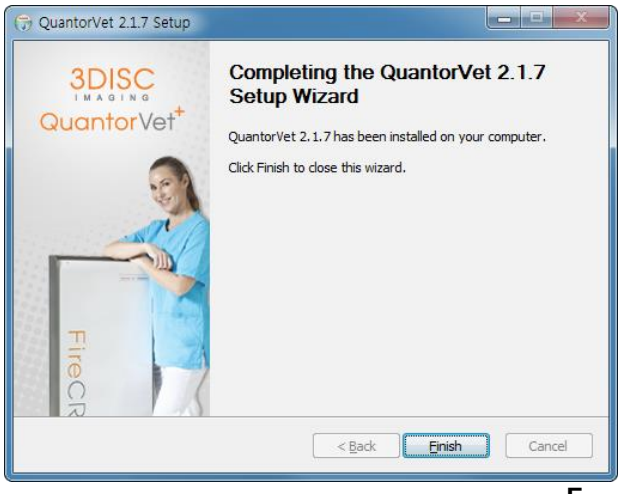



**Figure 2.10 Installation Finish Dialog Box**

- If the Windows Security Dialog Box pops up after installation, click [Allow access].

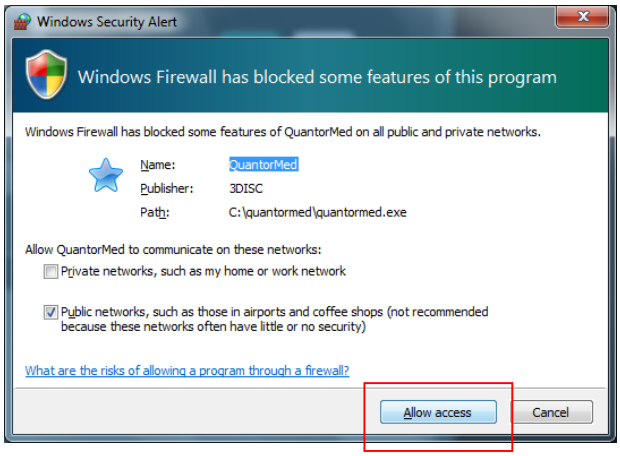

Windows Security Alert
Windows Firewall has blocked some features of this program
Windows Firewall has blocked some features of QuantorMed on all public and private networks.
Name: QuantorMed
Publisher: 3DISC
Path: C:\quantormed\quantormed.exe
Allow QuantorMed to communicate on these networks:
Private networks, such as my home or work network
Public networks, such as those in airports and coffee shops (not recommended because these networks often have little or no security)
What are the risks of allowing a program through a firewall?
Allow access
Cancel

**Figure 2.61 Windows Security Dialog Box**

# 2.3. *Start and Termination*

## 2.3.1. *System Start*

1. Turn on the ***FireCR*** CR Reader.
2. Turn on the monitor and PC.

**WARNING**

Do not run any application software other than ***QuantorVet+*** during operation of the scanner. This may slow the scanner response.

## 2.3.2. *Start Program*

After Windows is successfully booted, you can launch the ***QuantorVet+*** program by double clicking the ***QuantorVet+*** icon on your desktop as shown in Figure 2.73.

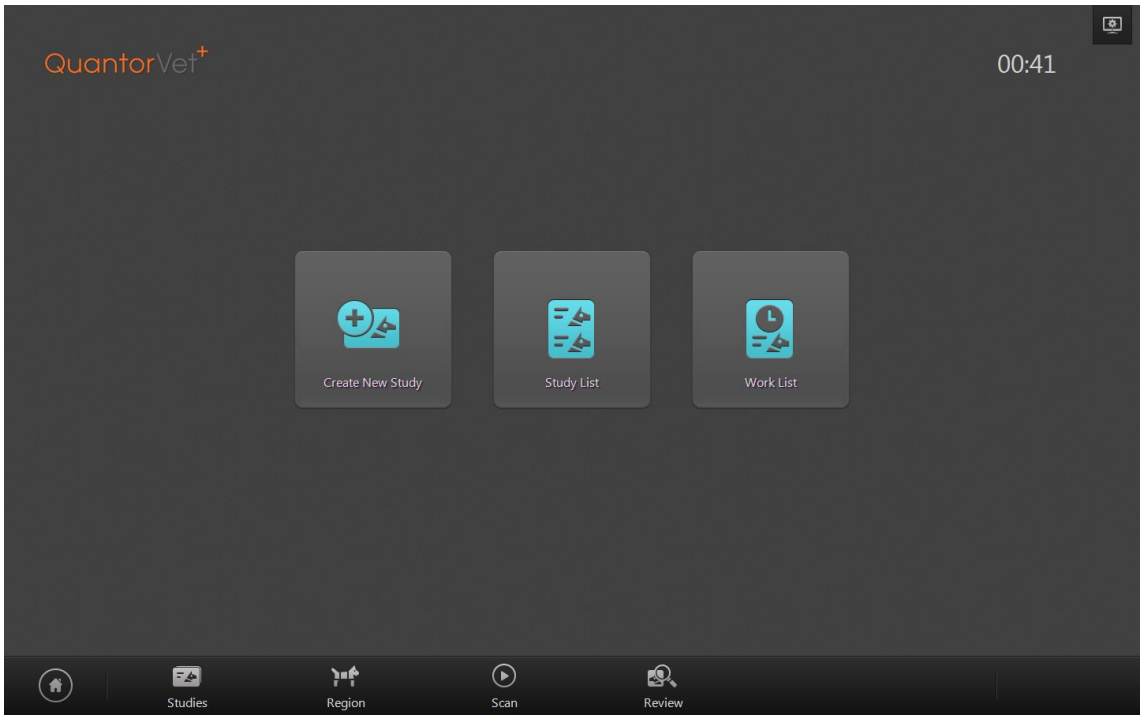



**Figure 2.72 Home Window**

**Figure 2.83 Short Cut Icon**

## 2.3.3. *Terminate Program*

Select the System button as shown in Figure 2.9 on the Home Window.

**Figure 2.94 System Button**

Now you can exit the application by selecting "Exit" in the System Menu.

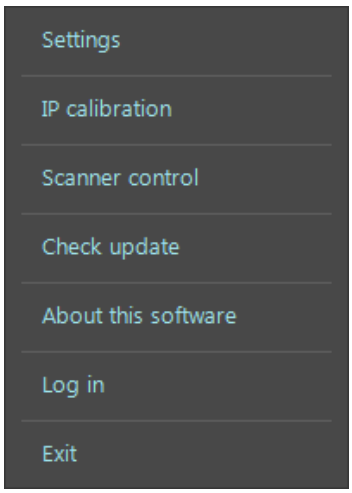



**Figure 2.105 System Menu**

## 2.4. *Device Calibration*

Select IP Calibration in the System Menu, then the Calibration will pop up. Follow the steps in the screen. During the Calibration X-ray radiation field must cover the whole area of the cassette.

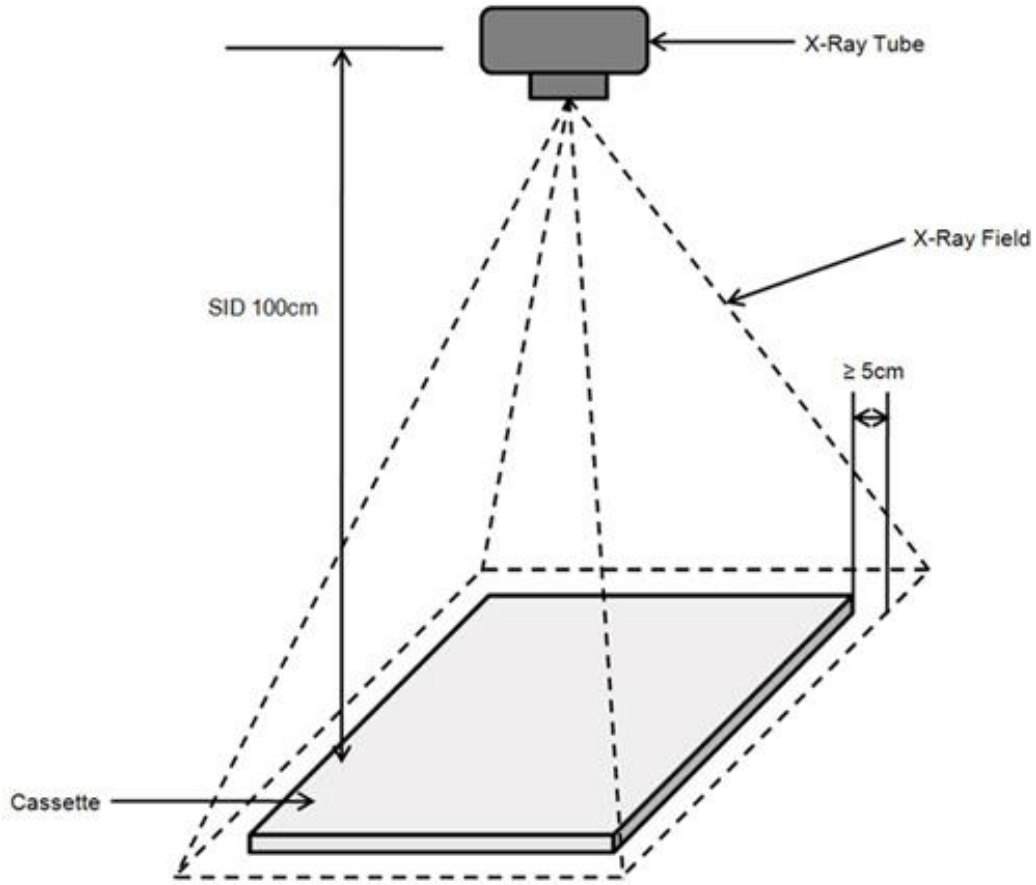



**Figure 2.116 Calibration Geometry**

**WARNING**

Calibrate the scanner before use. The “Please calibrate system” message pops up if the scanner is not calibrated or calibration data does not exist.

It is recommended to calibrate the reader after moving it and as a part of regular maintenance.

## 2.4.1. *FireCR*

Cassette size 24cm x 30cm (10” x 12”) and 35cm x 43cm (14” x 17”) are used for the Calibration of ***FireCR.***

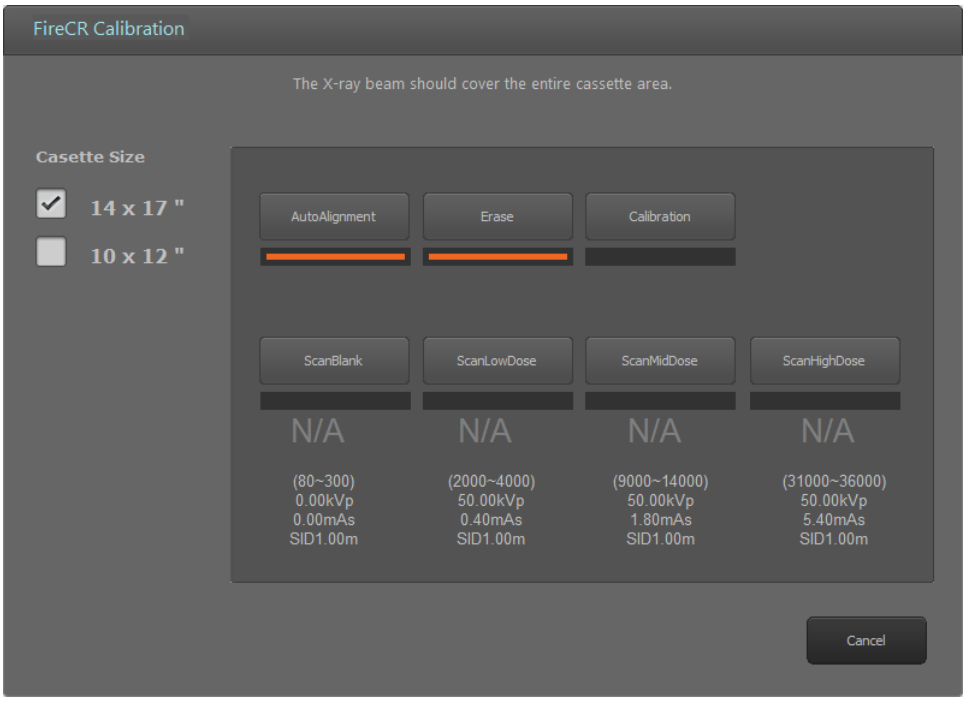



**Figure 2.127 IP Calibration**

| Name | Description |
|---|---|
| Auto Alignment | Alignment of laser beam position. |
| Erase | Erase IP. |
| Scan Blank | Create the first calibration image file. |
| Scan Low Dose | Create the second calibration image file. |
| Scan Mid Dose | Create the third calibration image file. |
| Scan High Dose | Create the fourth calibration image file. |
| Calibration | Create a calibration data file. After a successful calibration the calibration window will automatically close. |
| Cancel | Close the IP Calibration window. This will abort the current calibration. |

| | |
|---|---|
| Cassette Size | Select the IP size for calibration. |
| Accept | Accept a calibration image file. The Accept button is displayed to accept calibration image files with values out of range. |
| Reject | Reject a calibration image file. The Reject button is displayed to reject calibration image files with values out of range. |

### 2.4.1.1. *Step 1: Auto Alignment*

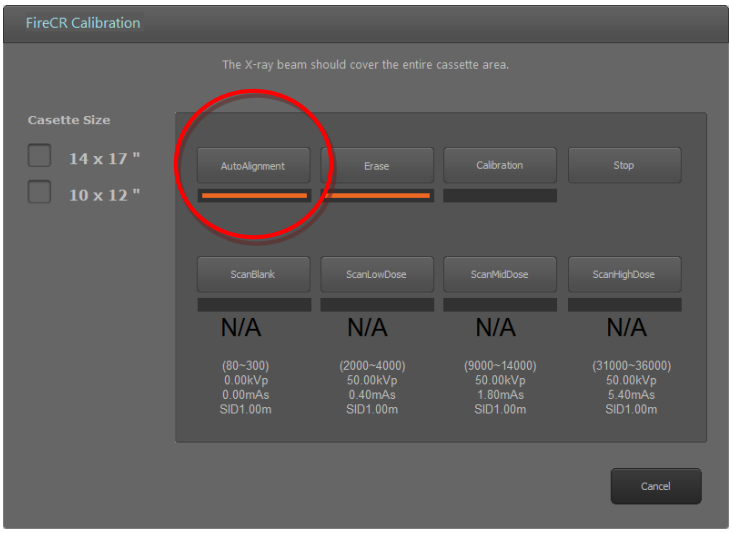



**Figure 2.138 Auto Alignment**

- Perform Auto Alignment before starting calibration to find the optimal laser beam position.

### 2.4.1.2. *Step 2: Erase*

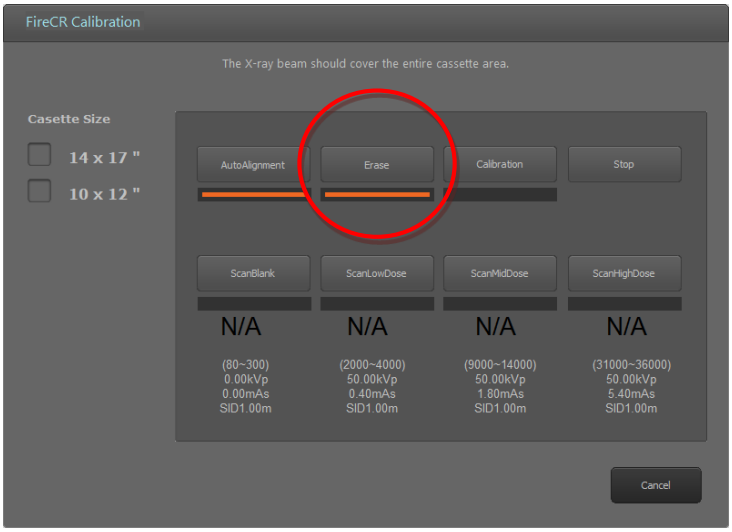



**Figure 2.149 Erase**

- The Erase button is enabled when the cassette is inserted to the reader.
- It erases the cassette before calibration.

### 2.4.1.3. *Step 3: Scan Blank*

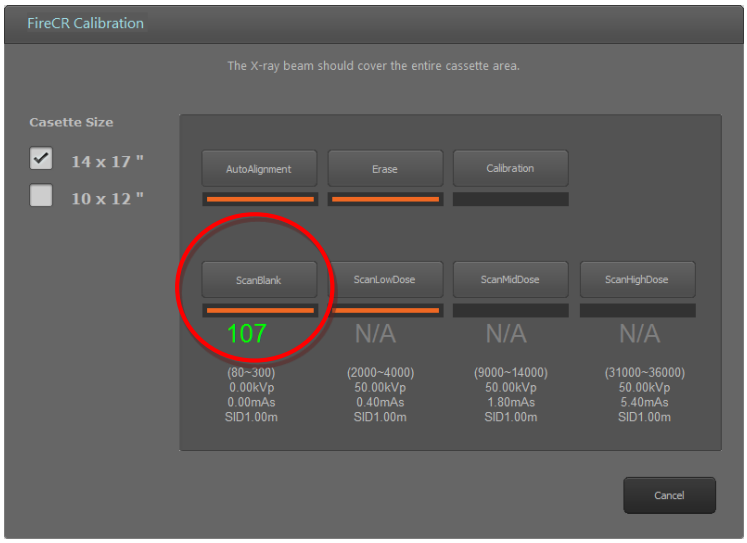



**Figure 2.20 Scan Blank**

- The ***Scan Blank*** button is enabled after performing the Erase step.
- After the Erase step, insert the cassette with no X-ray exposure into the reader and click ***Scan Blank*** to acquire the first calibration image.
- The mean intensity value of the blank image is displayed beneath the button.
- The mean intensity value of the blank image is displayed in green if the value is within the acceptable range.

- The mean intensity value of the blank image is displayed in red if the value is not within the acceptable range.
- If the mean intensity value of the blank image is displayed in red, click ***Accept*** to continue anyways or ***Reject*** to try again.
- To lower the mean intensity value of the blank image, click ***Erase*** again.

### 2.4.1.4. *Step 4: Scan Low Dose*

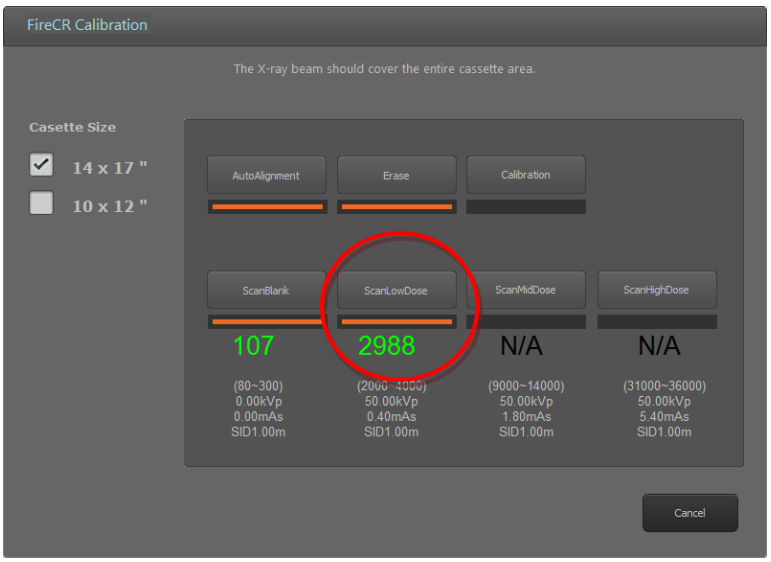



**Figure 2.151 Scan Low Dose**

- The ***Scan Low Dose*** button is enabled after performing a ***Scan Blank***.
- Expose the cassette to the X-ray with the conditions noted below the ***Scan Low Dose*** button.
  Then, insert the cassette into the reader and click ***Scan Low Dose*** to acquire the second calibration image.
- The mean intensity value of the low dose image is displayed beneath the button.
- The mean intensity value of the low dose is displayed in green if the value is within the acceptable range.
- The mean intensity value of the low dose is displayed in red if the value is not within the acceptable range, click ***Accept*** to continue anyways or ***Reject*** to try again.
- Increase the X-ray dose to increase the mean intensity value or lower the X-ray dose to decrease the mean intensity value. ***If changes are made to technique (Dose) please note the new values used (KVp, mAs) and input the new data in C:\QuantorVet+\firecr.ini**

## 2.4.1.5. *Step 5: Scan Mid Dose*

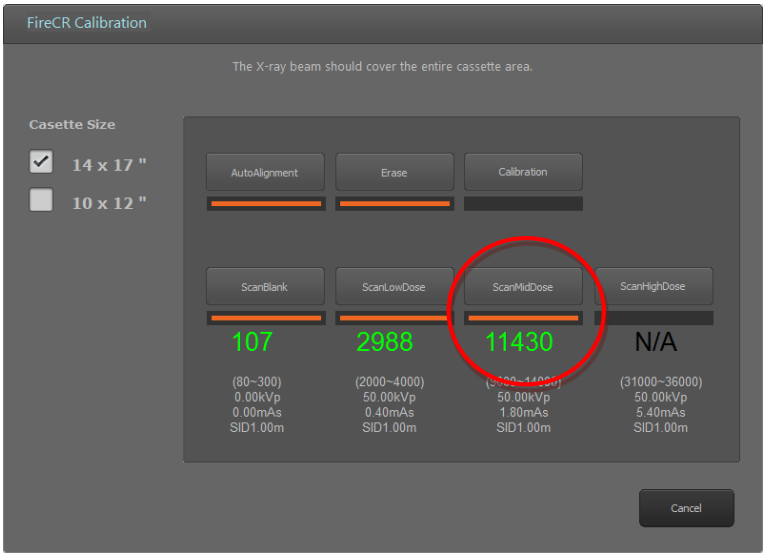



**Figure 2.162 Scan Mid Dose**

- The Scan Mid Dose button is enabled after performing a Scan Low Dose.
- Expose the cassette to the X-ray with the conditions noted below the ***Scan Mid Dose*** button.
  Then, insert the cassette into the reader and click ***Scan Mid Dose*** button to acquire the third calibration image.
- The mean intensity value of the mid dose image is displayed beneath the button.
- The mean intensity value of the mid dose is displayed in green if the value is within acceptable range.
- The mean intensity value of the mid dose is displayed in red if the value is not within the acceptable range, click ***Accept*** to continue anyways or ***Reject*** to acquire the mid dose image again.
- Increase the X-ray dose to increase the mean intensity value or lower the X-ray dose to decrease the mean intensity value.

## 2.4.1.6. *Step 6: Scan High Dose*

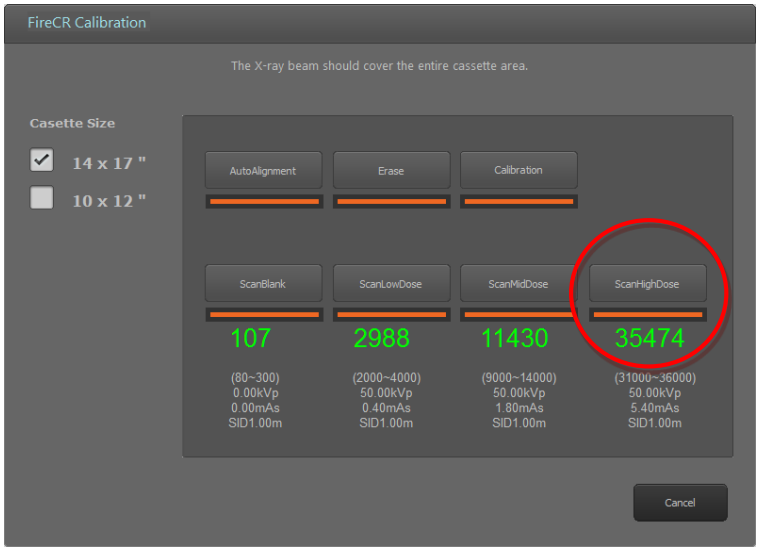



**Figure 2.173 Scan High Dose**

- The ***Scan High Dose*** button is enabled after performing a Scan Mid Dose.
- Expose the cassette to the X-ray with the conditions noted below the ***Scan High Dose*** button.
  Then, insert the cassette into the reader and click ***Scan High Dose*** button to acquire the fourth calibration image.
- The intensity value of the high dose image is displayed beneath the button.
- The intensity value of the high dose is displayed in green if the value is within the acceptable range.
- The intensity value of the high dose is displayed in red if the value is not within the acceptable range, click ***Accept*** to continue anyways or ***Reject*** to acquire the high dose image again.
- Increase the X-ray dose to increase the mean intensity value or lower the X-ray dose to decrease the mean intensity value. ***If changes are made to technique (Dose) please note the new values used (KVp, mAs) and input the new data in C:\QuantorVet+\firecr.ini**

## 2.4.1.7. *Step 7: Calibration!*

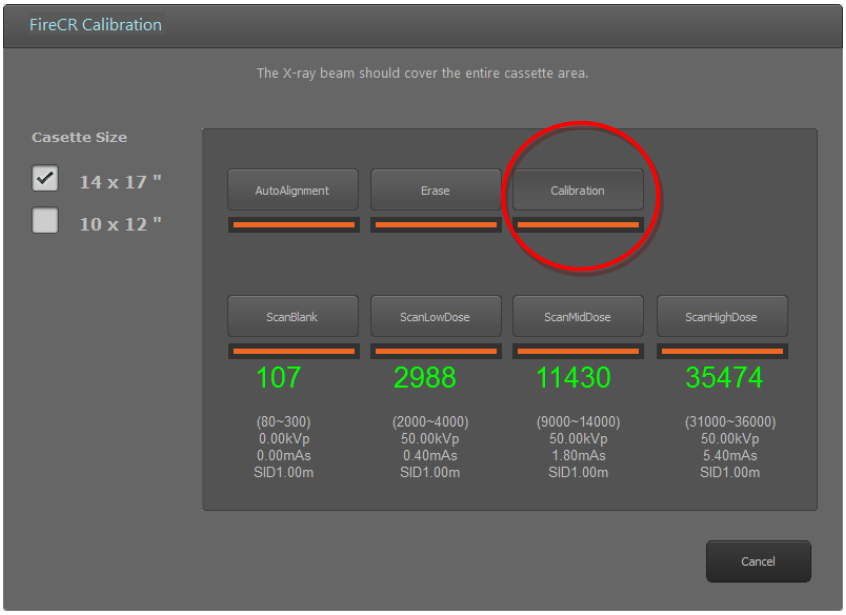



**Figure 2.184 Calibration**

- The ***Calibration*** button is enabled after performing a successful Scan High Dose.
- Click the ***Calibration*** button to generate calibration data. Calibration data is saved in your local program folder.
- After generation of calibration data, the calibration window closes automatically.

## 2.4.1.8. *Cancel*

- You can exit calibration window in the middle of process. This will abort your current calibration process.

## 2.4.1.9. *Note*

- When the mean intensity value for each step is within acceptable range, values are shown in green.

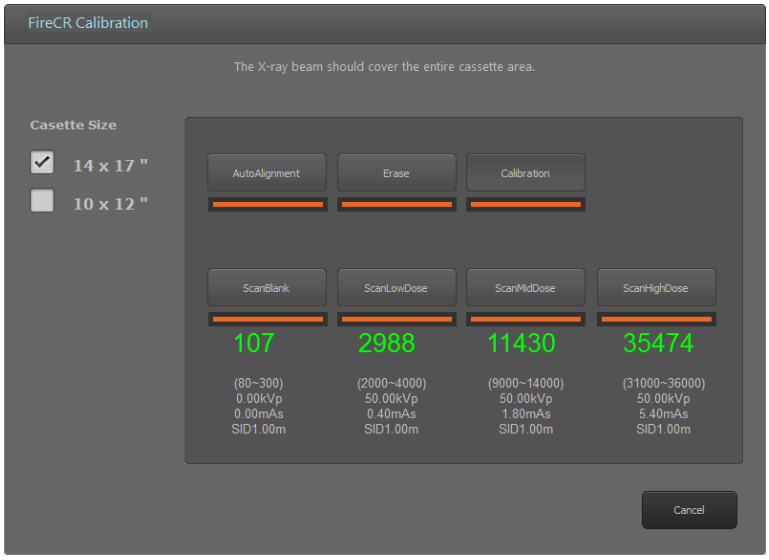



**Figure 2.195 Proper Calibration**

- When the mean intensity value for each step is not within acceptable range, values are shown in red.

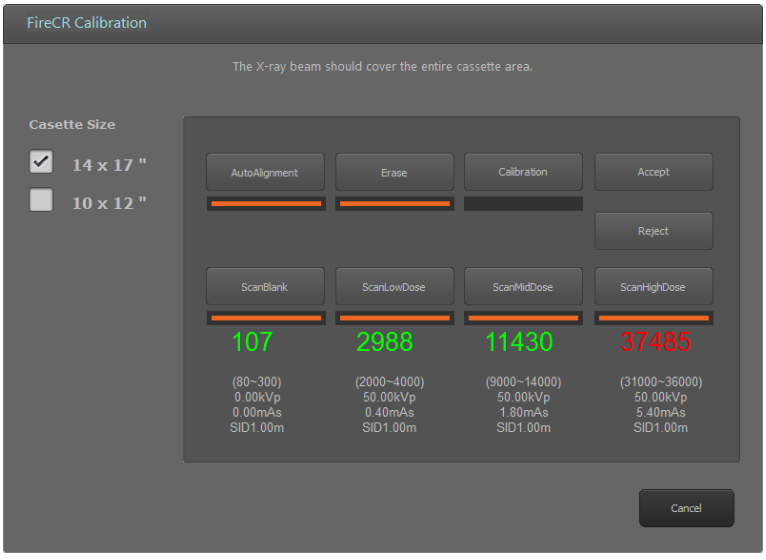



**Figure 2.206 Improper Calibration**

- Start the calibration process from ***Auto Alignment*** or ***Erase*** for recalibration of the reader.
- Or click “Accept” button to use it for calibration data or click “Reject” to retake the image.

**NOTE**

2 calibration files (section.dat, section2.dat) are created in the folder after successful completion of calibration process.

## 2.4.2. *FireCR Flash*

Cassette size 35cm x 43cm is used for the calibration of ***FireCR Flash***.

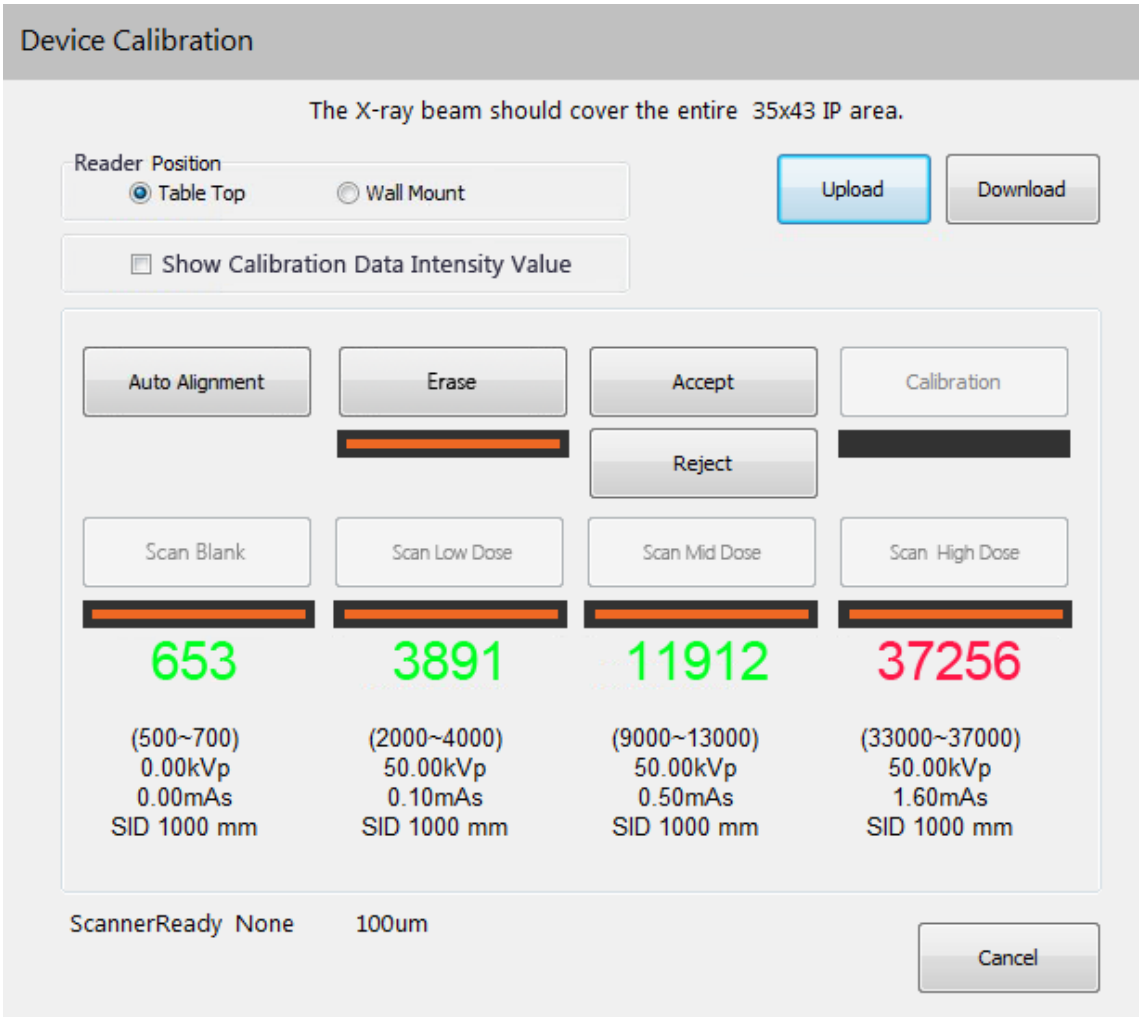



**Figure 2.17 *FireCR Flash* IP Calibration**

| Name | Description |
|---|---|
| Reader Position | Select the type of installation position. |
| Show Calibration Data Intensity Value | Show intensity value in each step in calibration data file when the box is checked. It shows intensity value of scanned image when the box is not checked. |
| Auto Alignment | Alignment of laser beam position. |
| Upload | Upload calibration file from PC to CR Reader |

| | |
|---|---|
| Download | Download calibration file from CR Reader to PC |
| Erase | Erase IP. |
| Scan Blank | Create the first calibration image file. |
| Scan Low Dose | Create the second calibration image file. |
| Scan Mid Dose | Create the third calibration image file. |
| Scan High Dose | Create the fourth calibration image file. |
| Calibration | Create a calibration data file. After a successful calibration the calibration window will automatically close. |
| Cancel | Close the IP Calibration window. This will abort the current calibration. |
| Cassette Size | Select the IP size for calibration. |
| Accept | Accept a calibration image file. The Accept button is displayed to accept calibration image files with values out of range. |
| Reject | Reject a calibration image file. The Reject button is displayed to reject calibration image files with values out of range. |

### 2.4.1.1. *Step 1: Reader Position Selection*

Select the type of installation position of ***FireCR Flash***. Both calibration data files are stored in ***FireCR Flash***. Corresponding calibration file is downloaded during installation of ***Quantor*** software by selecting the reader position.

**NOTE**

If you want to change the position of the reader, select different reader position and click “Download” to download corresponding calibration data file.

### 2.4.1.2. *Step 2: Auto Alignment*

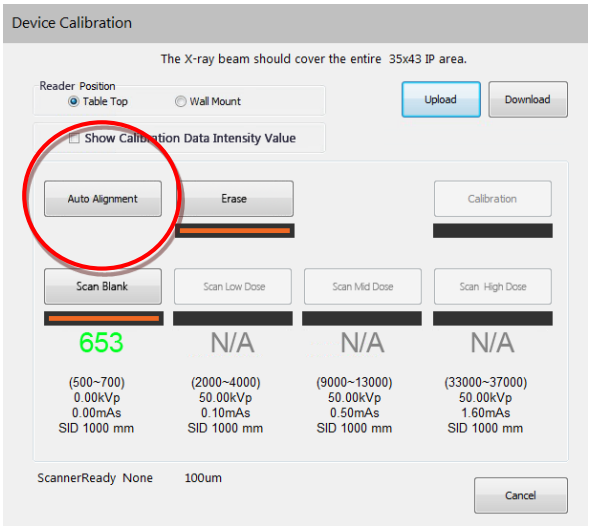



**Figure 2.2 Auto Alignment**

- Perform Auto Alignment before starting calibration to find the optimal laser beam position.

### 2.4.1.3. *Step 3: Erase*

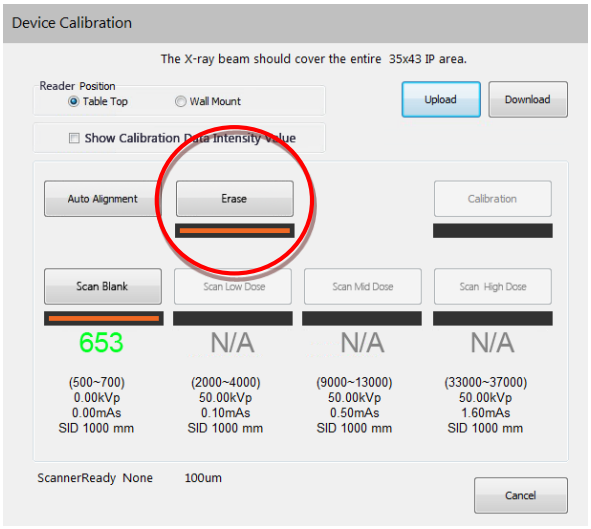



**Figure 2.3 Erase**

- The Erase button is enabled when the cassette is inserted to the reader.
- It erases the cassette before calibration.

## 2.4.1.4. *Step 4: Scan Blank*

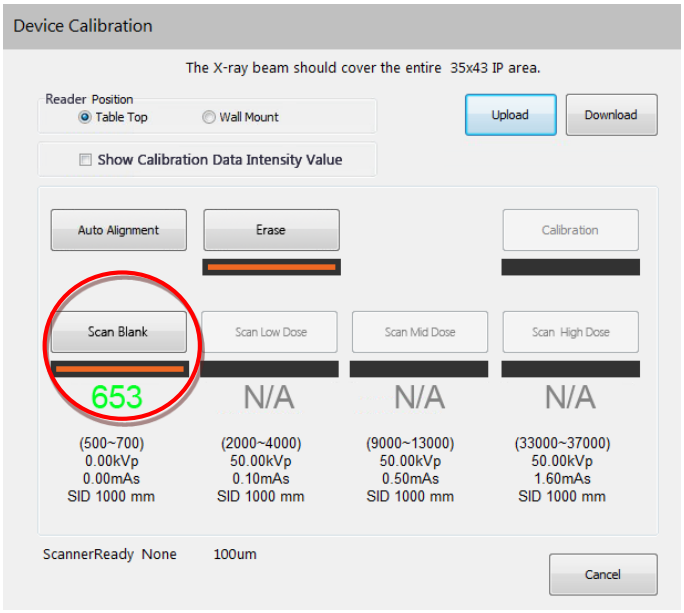



**Figure 2.4 Scan Blank**

- The ***Scan Blank*** button is enabled after performing the Erase step.
- After the Erase step, insert the cassette with no X-ray exposure into the reader and click ***Scan Blank*** to acquire the first calibration image.
- The mean intensity value of the blank image is displayed beneath the button.
- The mean intensity value of the blank image is displayed in green if the value is within the acceptable range.
- The mean intensity value of the blank image is displayed in red if the value is not within the acceptable range.
- If the mean intensity value of the blank image is displayed in red, click ***Accept*** to continue anyways or ***Reject*** to try again.
- To lower the mean intensity value of the blank image, click ***Erase*** again.

## 2.4.1.5. *Step 5: Scan Low Dose*

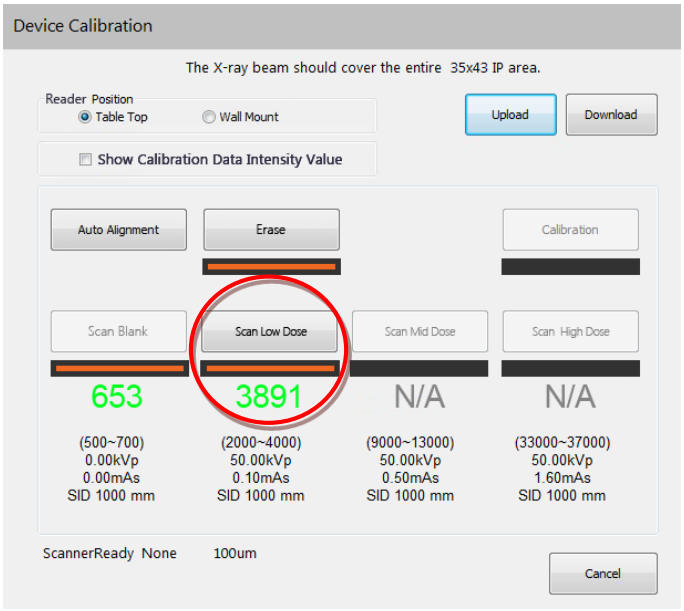



**Figure 2.5 Scan Low Dose**

- The ***Scan Low Dose*** button is enabled after performing a ***Scan Blank***.
- Expose the cassette to the X-ray with the conditions noted below the ***Scan Low Dose*** button.
  Then, insert the cassette into the reader and click ***Scan Low Dose*** to acquire the second calibration image.
- The mean intensity value of the low dose image is displayed beneath the button.
- The mean intensity value of the low dose is displayed in green if the value is within the acceptable range.
- The mean intensity value of the low dose is displayed in red if the value is not within the acceptable range, click ***Accept*** to continue anyways or ***Reject*** to try again.
- Increase the X-ray dose to increase the mean intensity value or lower the X-ray dose to decrease the mean intensity value. ***If changes are made to technique (Dose) please note the new values used (KVp, mAs) and input the new data in "Firecr.ini"**

## 2.4.1.6. *Step 6: Scan Mid Dose*

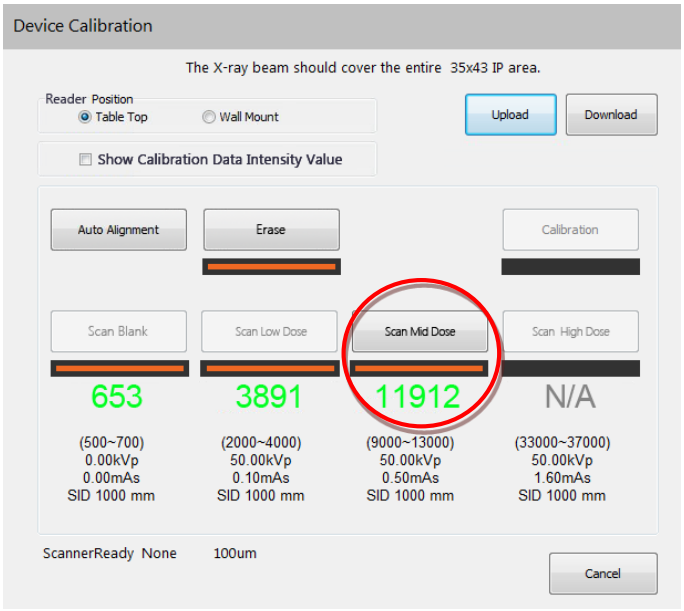



**Figure 2.6 Scan Mid Dose**

- The Scan Mid Dose button is enabled after performing a Scan Low Dose.
- Expose the cassette to the X-ray with the conditions noted below the ***Scan Mid Dose*** button.
  Then, insert the cassette into the reader and click ***Scan Mid Dose*** button to acquire the third calibration image.
- The mean intensity value of the mid dose image is displayed beneath the button.
- The mean intensity value of the mid dose is displayed in green if the value is within acceptable range.
- The mean intensity value of the mid dose is displayed in red if the value is not within the acceptable range, click ***Accept*** to continue anyways or ***Reject*** to acquire the mid dose image again.
- Increase the X-ray dose to increase the mean intensity value or lower the X-ray dose to decrease the mean intensity value.

## 2.4.1.7. *Step 7: Scan High Dose*

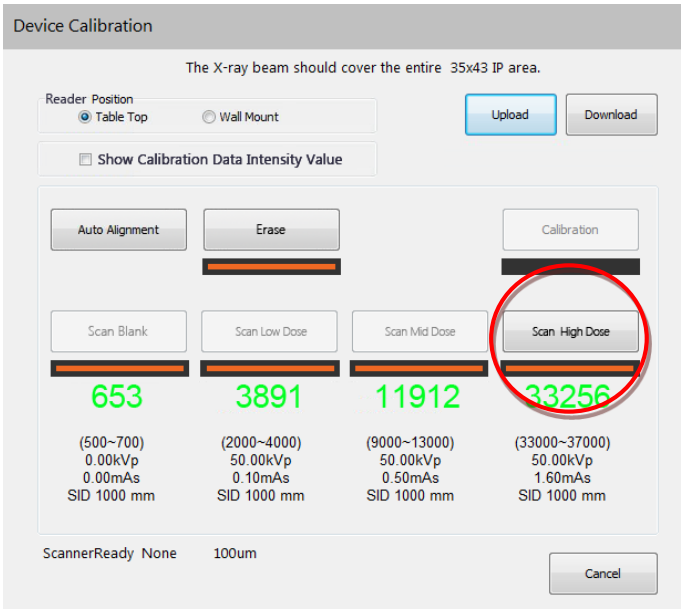



**Figure 2.7 Scan High Dose**

- The ***Scan High Dose*** button is enabled after performing a Scan Mid Dose.
- Expose the cassette to the X-ray with the conditions noted below the ***Scan High Dose*** button.
  Then, insert the cassette into the reader and click ***Scan High Dose*** button to acquire the fourth calibration image.
- The intensity value of the high dose image is displayed beneath the button.
- The intensity value of the high dose is displayed in green if the value is within the acceptable range.
- The intensity value of the high dose is displayed in red if the value is not within the acceptable range, click ***Accept*** to continue anyways or ***Reject*** to acquire the high dose image again.
- Increase the X-ray dose to increase the mean intensity value or lower the X-ray dose to decrease the mean intensity value. ***If changes are made to technique (Dose) please note the new values used (KVp, mAs) and input the new data in**
- **C:\QuantorMed+\firecr.ini**

## 2.4.1.8. *Step 8: Calibration*

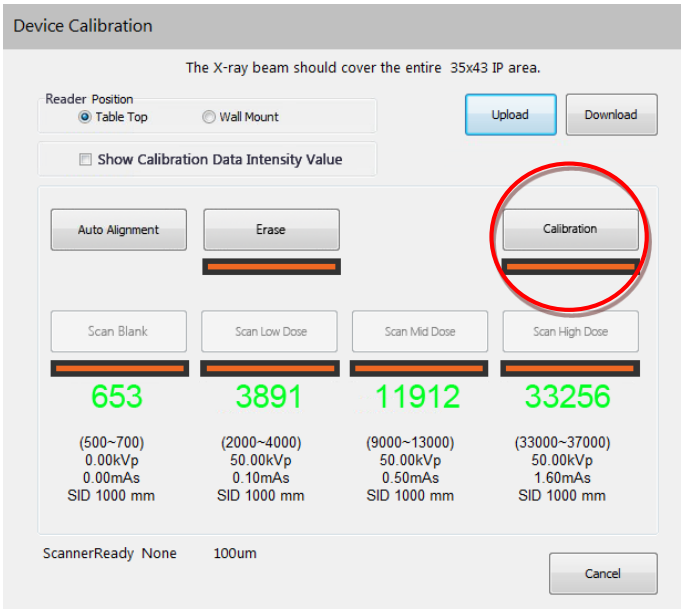



**Figure 2.8 Calibration**

- The ***Calibration*** button is enabled after performing a successful Scan High Dose.
- Click the ***Calibration*** button to generate calibration data. Calibration data is saved in your local program folder.
- After generation of calibration data, the calibration window closes automatically.

## 2.4.1.9. *Cancel*

- You can exit calibration window in the middle of process. This will abort your current calibration process.

## 2.4.1.10. *Note*

- When the mean intensity value for each step is within acceptable range, values are shown in green.

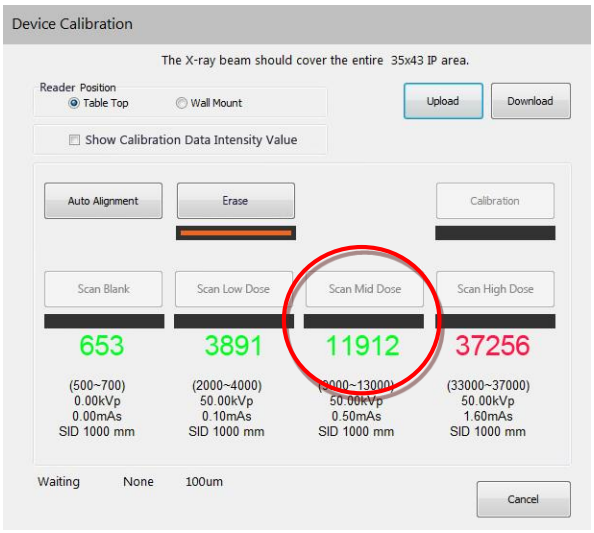



**Figure 2.9 Proper Calibration**

- When the mean intensity value for each step is not within acceptable range, values are shown in red.

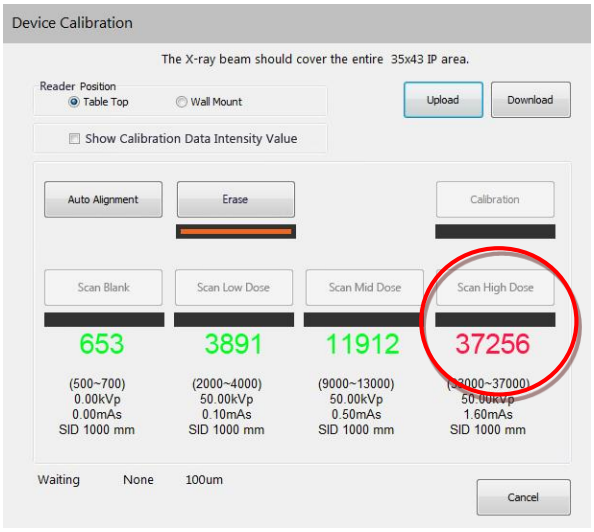



**Figure 2.10 Improper Calibration**

- Start the calibration process from ***Auto Alignment*** or ***Erase*** for recalibration of the reader.
- Or click “Accept” button to use it for calibration data or click “Reject” to retake the image.

**NOTE**

Calibration file is created in the folder after completion of calibration process. (Table Top : section.dat, Wall Mount : sectionfw.dat)

# 3. Introduction

## 3.1. Supported Resolutions

Landscape resolutions with 16:9, 4:3 and 5:4 ratios are supported. Portrait ratios are not supported. The horizontal resolution of the monitor must be at least 1280 pixels, and the vertical resolution of the monitor must be at least 768 pixels. Recommended resolutions are listed in Table 3.1.

**Table 3.1**

| Screen Ratio | Screen Resolution |
|---|---|
| 16:9 | 1366 x 768<br>1280 x 800<br>1400 x 900<br>1600 x 900<br>1920 x 1080 |
| 4:3, 5:4 | 1280 x 1024 |

If you have multiple monitors you can select ***QuantorVet+*** display monitor at Setting's [System – System Option – Display Monitor]. If you select Review Monitor differently from Display Monitor at Setting's [System – System Option – Review Monitor], Review Screen will be displayed with full screen mode at assigned monitor. Full screen review monitor supports all screen resolution types, and both landscape and portrait monitor orientation.

## 3.2. Home

The Home screen is the first screen that appears when the program is run. From the Home screen, you can create a new study or view existing studies.

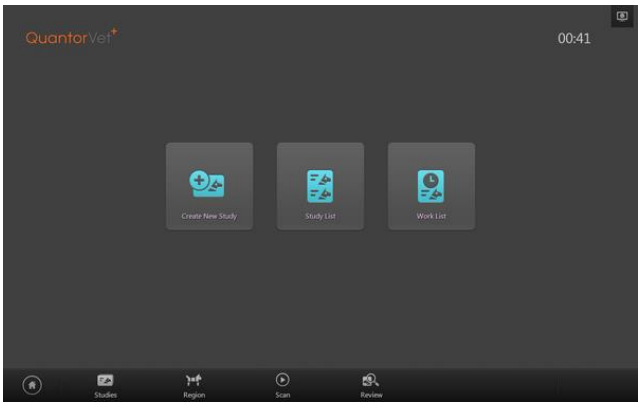



**Figure 3.1 Home Screen**

## 3.3. *Navigation Bar*

The Navigation Bar is located at the bottom of the screen. The Navigation Bar is always displayed while the program is running, allowing the user to easily switch screens during a task.

**Figure 3.2 Navigation Bar**

① Home
② Studies
③ Region Selection
④ Scan
⑤ Review

## 3.4. *Studies*

The Studies screen shows a collection of windows that are related to the studies. You can enter the Studies screen by clicking the Studies button in the Navigation Bar. The Sub-Navigation Bar is located on the left of the screen. In the Sub-Navigation Bar, you can select a Study List, Work List or Transport windows that are related to the study.

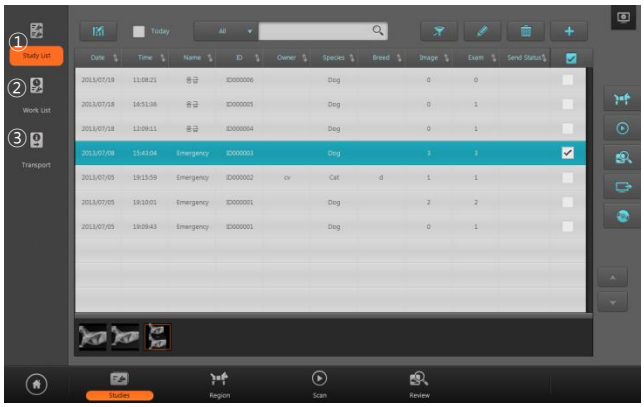



**Figure 3.3 Studies Screen**

① Study List: You can perform various tasks by searching existing studies and selecting a study.
② Work List: You can query the work list from the PACS work list server, select the desired study and immediately begin image acquisition.
③ Transport: You can confirm the transmission results of the acquired images.

## 3.5. *New Study*

The New Study screen is the first page for performing a scan. After entering the necessary patient information and study information, and adding a new study, you can begin a scan.

**Figure 3.4 New Study**

## 3.6. *Region Selection*

In the Region Selection screen, you can select the region to scan and add it to the Task List.

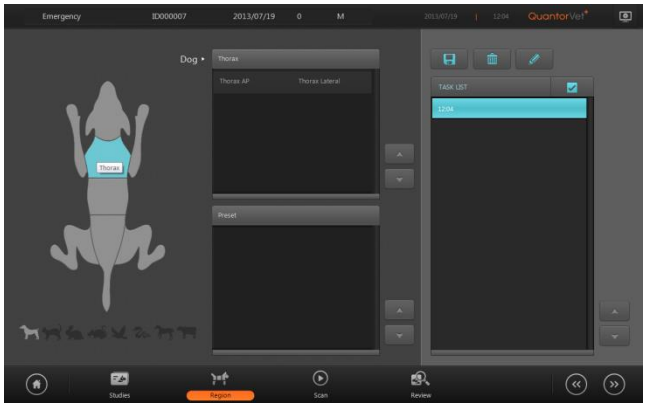


**Figure 3.5 Region Selection**

## 3.7. *Patient Information*

The Patient Information Bar is displayed at the top of all the screens, with the exception of the Home screen and the New Study screen. The Patient Information Bar displays patient information and other related information.

**Figure 3.6 Patient Information**

① Patient Name
② Patient ID

③ Patient's Date of Birth

④ Patient's Age

⑤ Patient's Sex (M: Male, F: Female, O: Other, SM: Sterile Male, SF: Sterile Female, S: Sterile)

⑥ Current Time

⑦ Model Name

⑧ System

## 3.8. *Scan*

In the Scan screen, you can insert a cassette into the ***FireCR*** and acquire images.

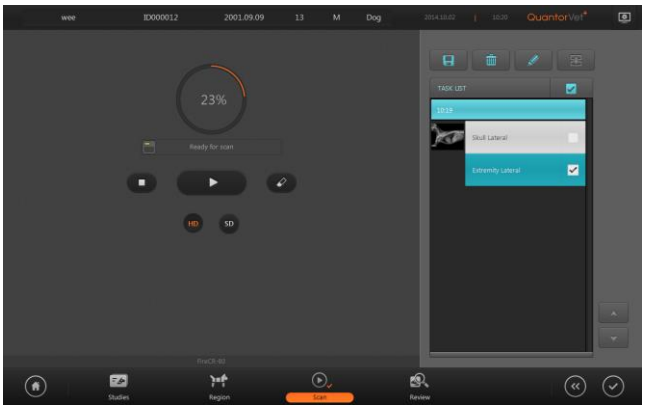



**Figure 3.7 Scan Screen**

## 3.9. *Review*

In the Review screen, you can query scanned images in the identical manner as the PACS Viewer. The Review screen is very useful for conducting diagnosis after acquiring the images.

**Figure 3.8 Review Screen**

# 4. Home Window

## 4.1. Screen Layout

The Home screen is the first screen that appears when the program is run. From the Home screen, you can create a new study or view existing studies. You can go back to the Home screen by using one of the actions below.

- Clicking the Home button in the Navigation Bar
- Clicking the End Study button in the Scan screen
- Clicking the End Study button in the Review screen

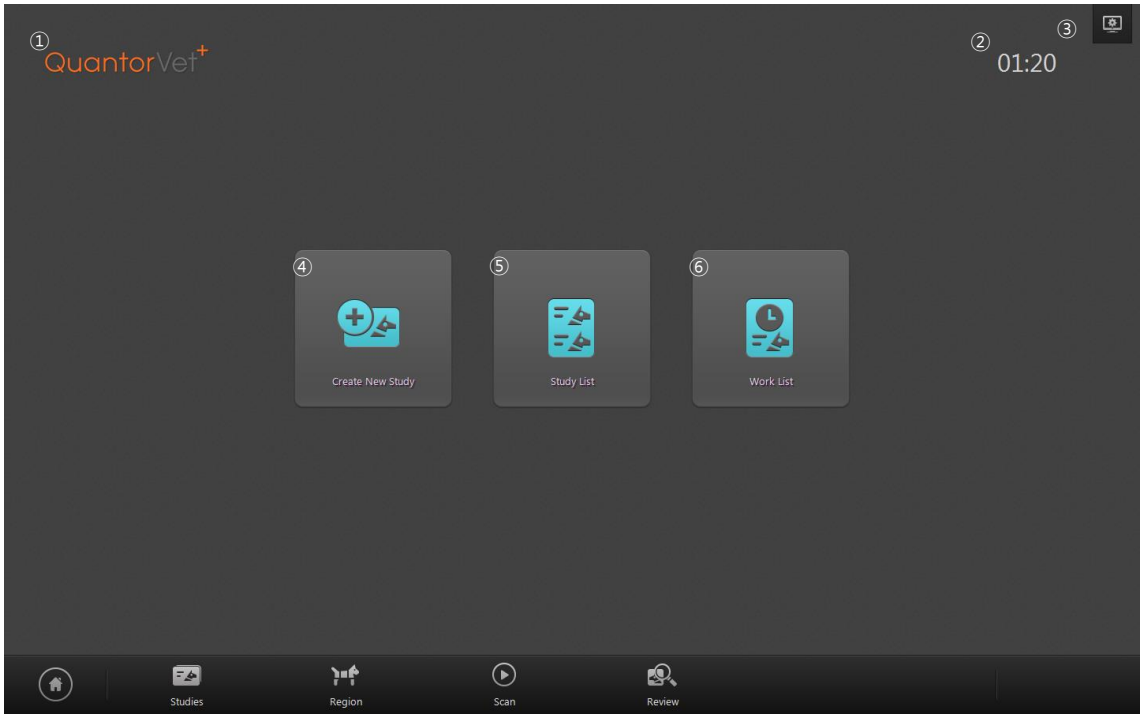



**Figure 4.1 Home Window**

① Model Name: Displays the model name of ***Quantor***

② Current Time: Current time is displayed in hours and minutes.

③ System: Displays the System menu.

④ Create New Study: Go to New Study screen.

⑤ Study List: Go to Study List screen.

⑥ Work List: Go to Work List screen.

## 4.2. *System Menu*

The System button is always displayed in the upper-right corner of the program. When the button is clicked, the following menu appears on the screen.

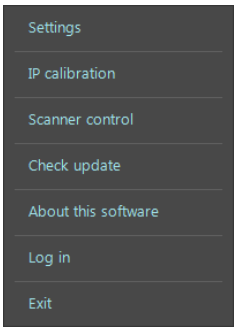



**Figure 4.2 System Menu**

- Settings: Displays the Settings window.
- IP Calibration: Runs IP Calibration program.
- Scanner Control: Runs Scanner Control program.
- Check Update: Checks for a new version. If a new version is available, it is automatically downloaded and installed.
- About this software: Displays software version information
- Log in: Login with user ID & password. It is displayed as “logout” when login.
- Exit: Exits the program.

## 4.3. *Login*

Login will show login dialog box as Figure 4.3.

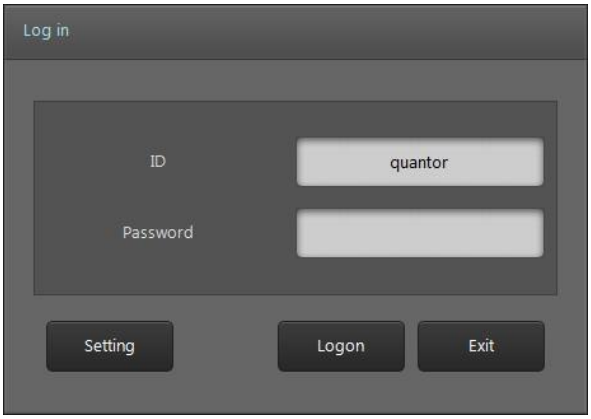



**Figure 4.3 Login Dialog Box**

- User name will be written to DICOM file (0008, 1070 - Operators Name)
- Click “Setting” to add new user. (Figure 4.4). Administrator password is required to access this mode.
- Logout is required if operator is changed.

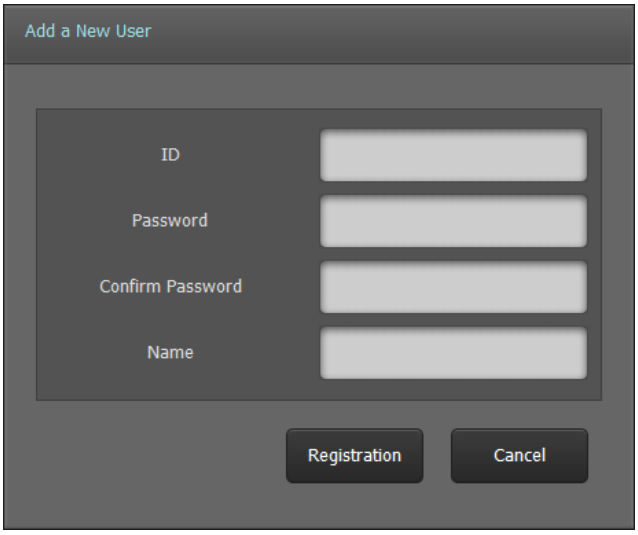



**Figure 4.4 Add User Dialog Box**

# 5. New Study

## 5.1. Screen Layout

The New Study screen is the first page when performing a scan. Enter the necessary patient and study information. You can easily switch to the next input field by using the Tab key. Fields marked by * are mandatory DICOM fields that must be filled in.

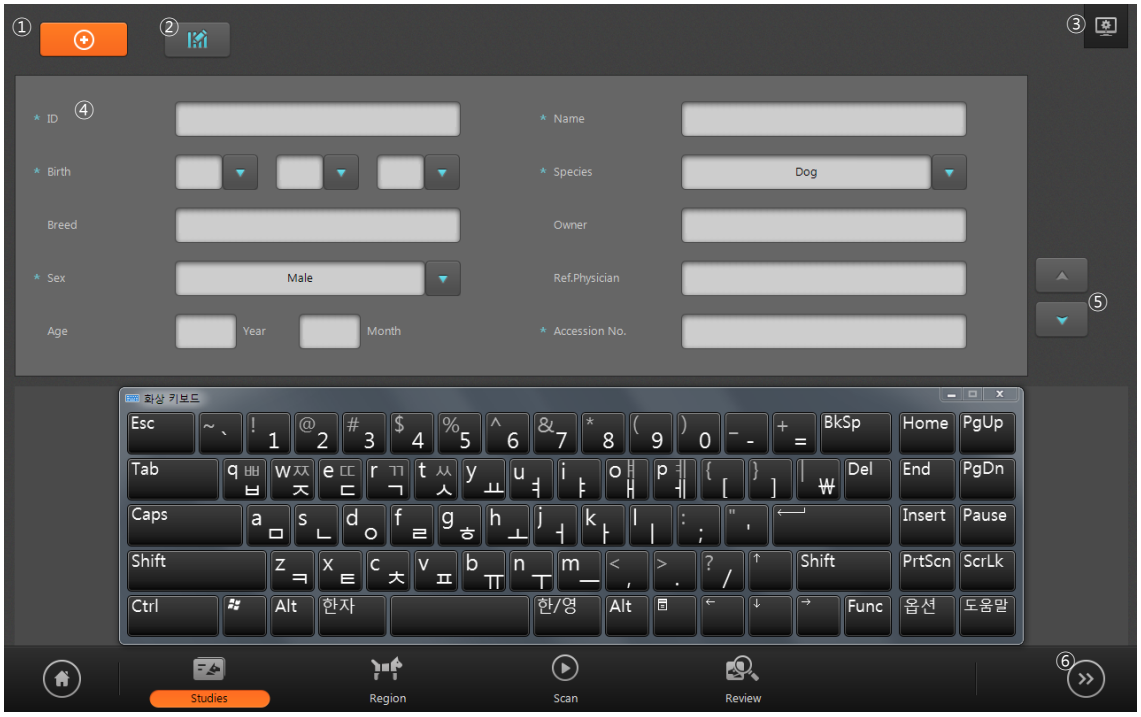



**Figure 5.1 New Study**

① Emergency: Mandatory fields are filled in automatically. This function is used in emergencies where patient information has not been identified to perform a scan first and fill in the patient data later.

② Edit Input Field: Bring up Input Field Edit dialog. In the Input Field Edit dialog, you can change the order of the input fields, and add or remove input fields.

③ System Menu: Display the System menu.

④ Input Field: Details about each input field are described in Table 5.1.

**Table 5.1 Input Field**

| Title | Description | Mandatory |
|---|---|---|
| Name | Enter patient name. | O |

| | | |
|---|---|---|
| ID | Enter patient ID. | O |
| Birth | Enter patient's date of birth. You can select a date from the drop-down box or manually enter numbers. When only the date of birth is entered and not the age, age is calculated automatically. | O |
| Sex | Select patient's sex.<br>(Male, Female, NA, Sterile Male, Sterile Female, Sterile) | O |
| Age | Enter patient's age. Leave the Year field blank if the patient is less than 1 year old. When only the age is entered and not the date of birth, date of birth is calculated automatically. When it does, month and date are automatically entered as January 1. | X |
| Ref. Physician | Enter the name of the referring physician. | X |
| Description | Enter study description. | X |
| Accession No. | Enter accession number. Entering an accession number is mandatory. If not entered, a new number will be generated automatically. | O |
| Size | Enter patient length. | X |
| Species | Select patient species. (Dog, Cat, Rabbit, Small Rodent, Bird, Exotics, Horse, Cow) | X |
| Breed | Enter patient breed. | X |
| Owner | Enter patient owner. | X |

⑤ Page Up/Down: Go to another page.

⑥ Next: Go to the Region Selection screen, which is the next step.

**WARNING**

Warning message pops up if any of mandatory item is missing, and can't proceed to the next step.

## 5.2. *Input Field Edit Dialog Box*

In the Input Field Edit dialog box, you can change the order of the input fields, and add or remove input fields. The input fields can be edited according to the user's environment. However, mandatory input fields cannot be removed.

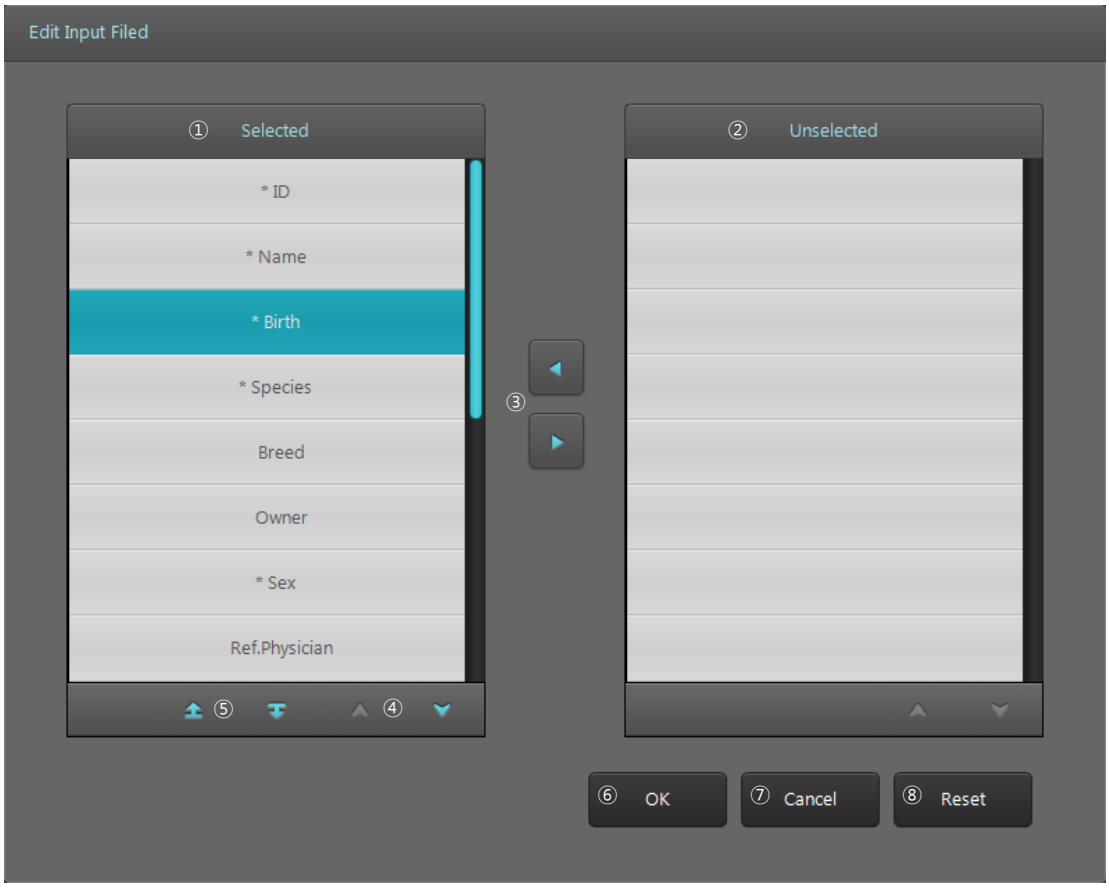



**Figure 5.2 Input Field Edit**

① Input field items to be displayed on the screen.

② Input field items not to be displayed on the screen.

③ Move selected items to left and right. Items on the left are displayed on the screen and the items on the right are not displayed on the screen.

④ Button for switching pages.

⑤ Move the selected items up or down on the list to change order.

⑥ Save changes and close the dialog box.

⑦ Cancel changes and close the dialog box.

⑧ Reset the fields to default settings.

# 6. Region Selection

## 6.1. Screen Layout

In the Region Selection screen, you can select the region to scan and add it to the Task List.

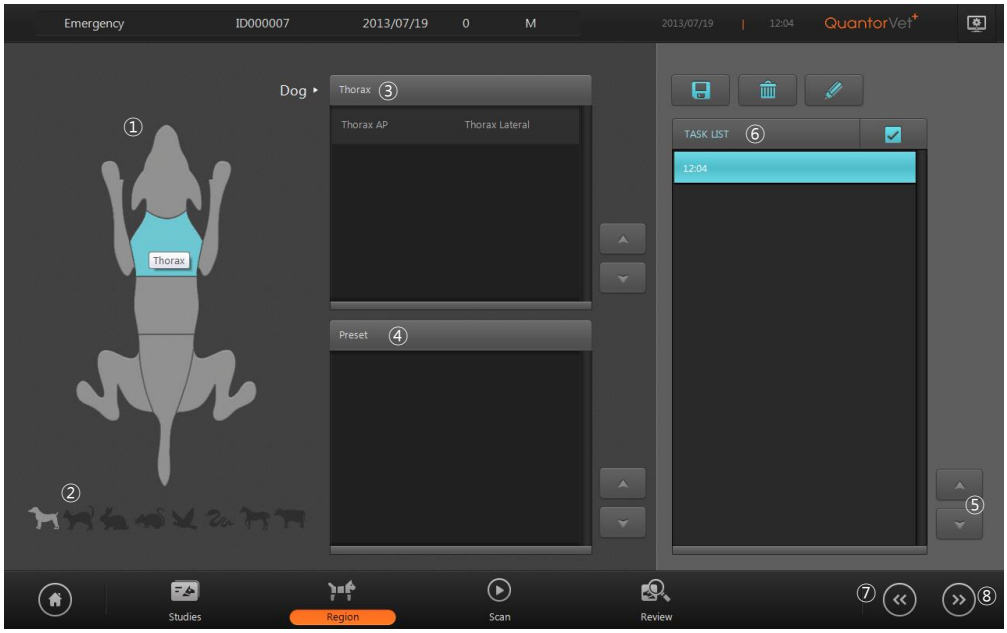



**Figure 6.1 Region Selection**

① Body Part: The region to be scanned will be displayed on the figure of the animal body. When you move the mouse cursor over the figure, the region to be selected will be marked by a different color. Select the desired region and the View Position List will be updated.

② Species: Change the species. You can't use this function after adding first View Position

③ View Position: Displays view positions that correspond with the selected region for scanning. Click on the region to scan and the region will be added to the Task List.

④ Preset: Displays view position presets. When a certain setting is used frequently, you can easily automatically add multiple view positions by selecting a preset instead of adding separate view positions each time.

⑤ Page Up/Down: Button for switching pages.

⑥ Task List: List of view positions added from View Position or Preset fields.

⑦ Previous: Go back to New Study screen.

⑧ Next: Proceed to Scan screen.

## 6.2. *Body Parts and View Positions*

The body parts and view positions provided in the product by default are listed in Table 6.1.

**Table 6.1 View Position**

| Species | Body Part | View Position |
|---|---|---|
| Dog,<br>Cat,<br>Rabbit,<br>Small Rodent | Abdomen | Lateral<br>AP |
| | Skull | Lateral<br>AP |
| | Dental | Dental Kit |
| | Pelvis | Lateral<br>AP |
| | Thorax | Lateral<br>AP |
| | Extremity | Lateral<br>AP |
| Bird | Chest | Lateral<br>AP |
| | Wing | Lateral<br>AP |
| Exotics | Snake | Lateral<br>AP |
| | Lizard | Lateral<br>AP |
| | Frog | Lateral<br>AP |
| | Turtle | Lateral<br>AP |
| Horse,<br>Cow | Cannon Bone and Splints | Lateral<br>Medial<br>AP/Dorsal |
| | Fetlock | Lateral<br>Dorsoplantar<br>Lateral Oblique<br>Medial Oblique |

| | | |
|---|---|---|
| | Knee | Lateral<br>Dorsal<br>Lateral Oblique<br>Medial Oblique |
| | Stifle | Lateral |
| | Elbow | Lateral |
| | Hock | Dorsoplantar<br>Lateral<br>Lateral Oblique<br>Medial Oblique |
| | Mandible | Lateral |
| | Dental | Dental Kit |

## 6.3. *Add Region, View Position*

You can add, delete or edit body part, region or position displayed in region selection. And Attributes of each preset can be edited.

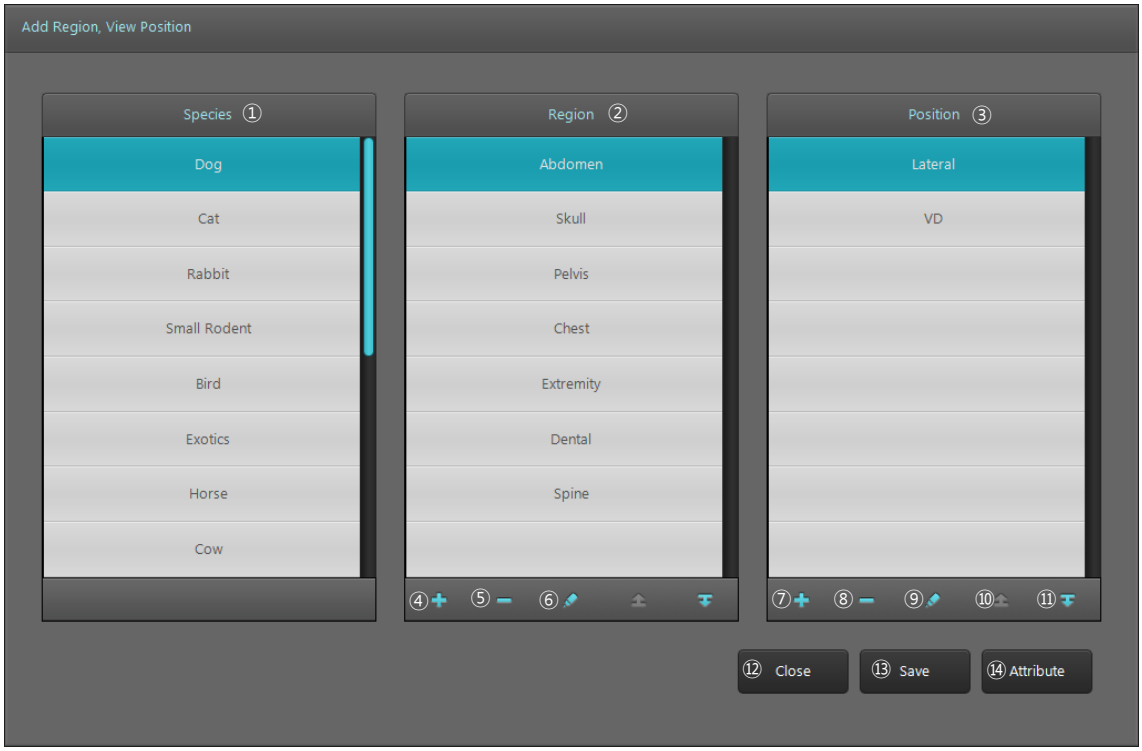



**Figure 6.2 Add Region, View Position**

① Species

② Region

③ Position

④ Add Region: Add new region. Type the new exam name in the window.

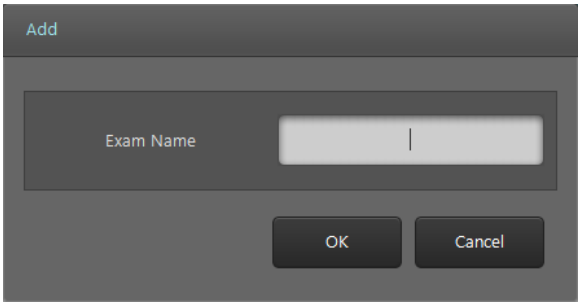



**Figure 6.3 Add Region**

⑤ Delete Region:
Delete selected region.

⑥ Edit Region:
Edit selected region.

⑦ Add Position:
Add new position. Type the new position name in the window. Tick Copy and type existing position in the window to copy properties to the new position.

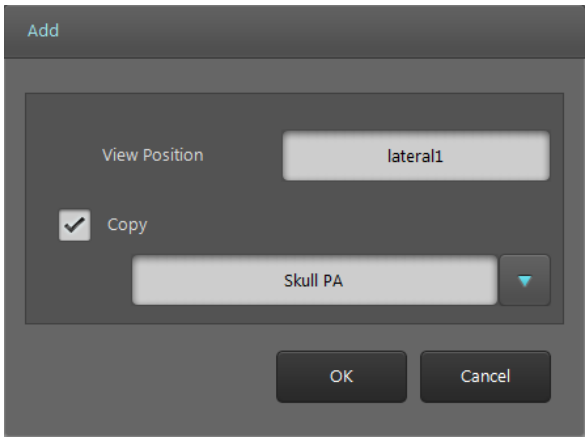



**Figure 6.4 Add Position**

⑧ Delete Position

⑨ Edit Position

⑩ Move Up: Move selected position upward.

⑪ Move Down: Move selected position downward.

⑫ Close: Close window.

⑬ Save: Save changes.

⑭ Attribute: Open Attribute window for selected position.

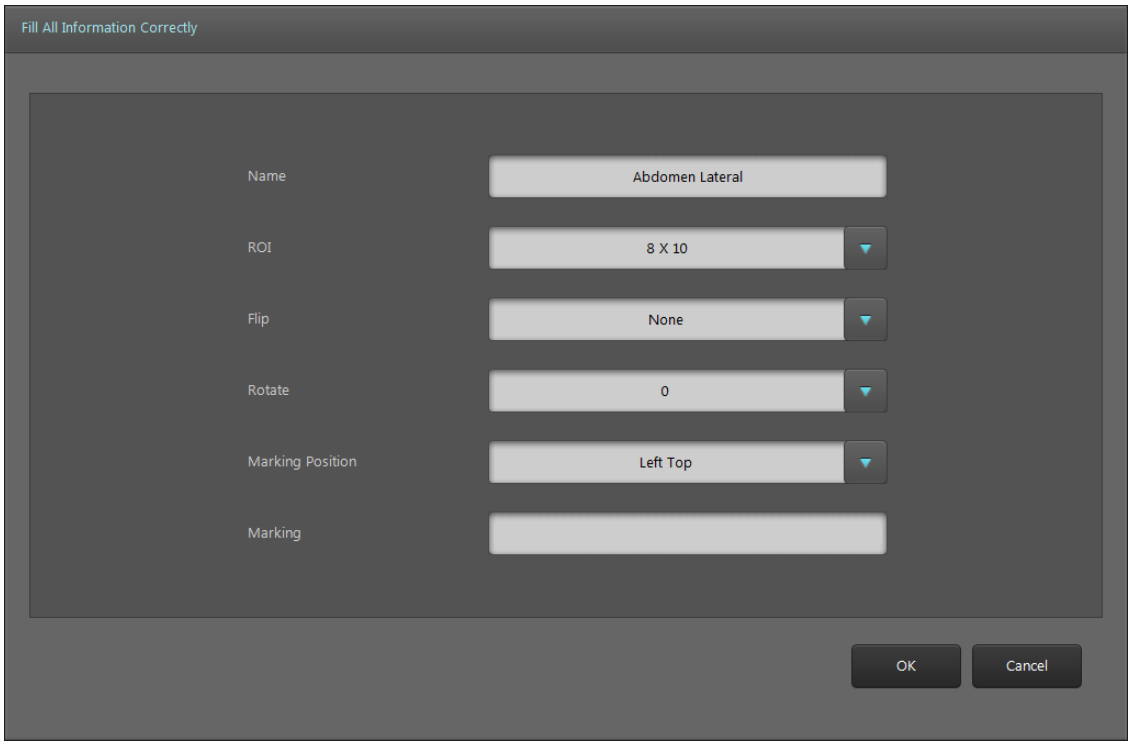



**Figure 6.5 Attribute Window**

① Name: Name of position

② ROI: Set default ROI.

③ Flip: Set default flip of the image.

④ Rotate: Set default rotation of the image.

⑤ Marking Position: Set default marking position on the image.

⑥ Marking: Set default marking on the image.

# 7. Scan

## 7.1. Screen Layout

In the Scan screen, you can insert a cassette into the ***FireCR*** and acquire images.

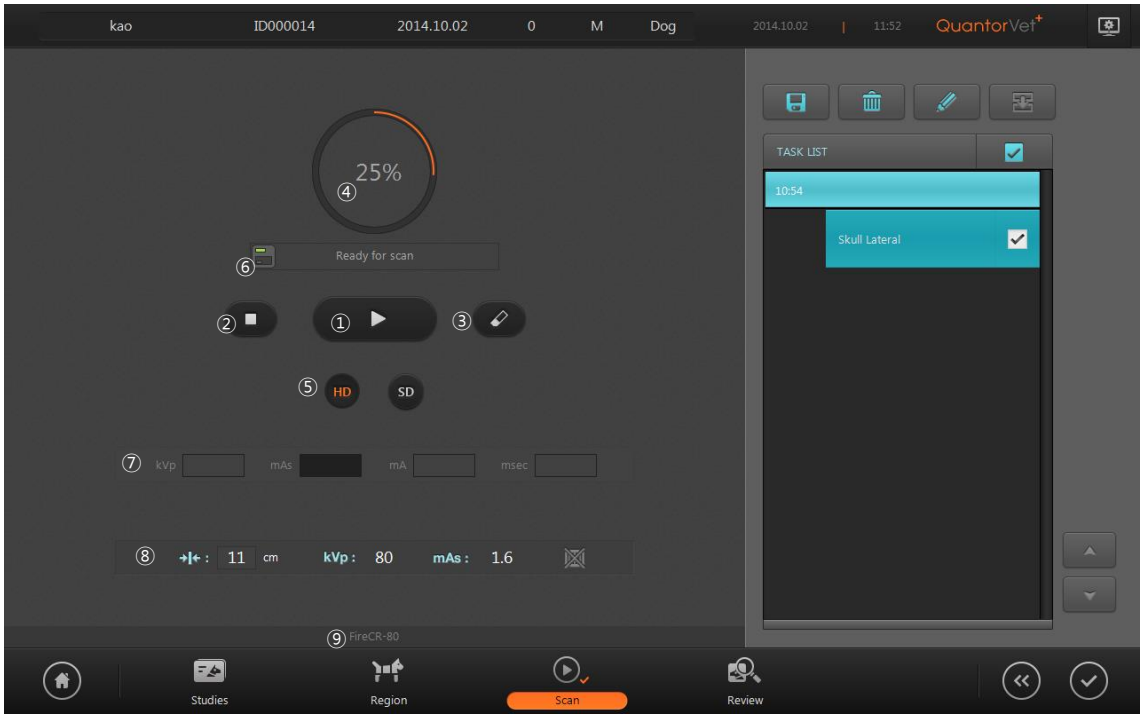



**Figure 7.1 Scan**

① Scan: Begin a scan.

② Stop: Stop a scan.

③ Erase: Erase the IP. By default, the IP is deleted automatically after a scan. This function is only used to manually delete the IP.

④ Progress: The scanning progress is shown in a circle and in percentages.

⑤ Resolution: Select the scan resolution. HD resolution scans with 100 mm pixel pitch, and SD resolution scans at 200 mm pixel pitch. Lower pixel pitch results in higher resolution images.

⑥ Cassette Indicator: Displays the status of the cassette.

⑦ Exposure Input: Enter the X-ray exposure settings.

⑧ Recommended Exposure Value: Displays recommended exposure value for selected region.

⑨ Model Name: Displays the model name of ***FireCR*** connected to the PC.

## 7.2. *Exposure Input*

Enter the X-ray exposure settings. Exposure Input field is only activated when it is enabled in [System – Exposure Input]. The entered values will be included in the DICOM information. As shown in Table 7.1, 4 types can be entered.

**Table 7.1 Exposure Input**

| Type | kVp | mA | ms | mAs |
|---|---|---|---|---|
| 1 | O | O | O | Calculated automatically |
| 2 | O | X | X | O |
| 3 | O | O | Calculated automatically | O |
| 4 | O | Calculated automatically | O | O |

## 7.3. *Recommended Exposure Value*

It displays recommended exposure value for selected region. It displays the value when [System – Exposure – Exposure Chart] is selected. Displaying items are kVp, mAs, mA, Sec, SID and Grid.

**WARNING**

Exposure value varies depending on the size of patient or status of X-ray system.

## 7.4. *Cassette Indicator*

The Cassette Indicator displays whether the cassette is inserted and recognized correctly.

**Table 7.2 Cassette Indicator**

| Indicator | Status |
|---|---|
| | A cassette is not inserted. |
| | A cassette is inserted, but cassette size information is not recognized. |
| | A cassette is inserted, cassette size information is recognized, but the current size has not been calibrated. |
| | The status is okay and ready for scan. |

**WARNING**

It is unable to scan if the cassette is not recognized correctly. In this case, check the connection of the reader with PC or check whether the cassette is inserted correctly.

# 8. Image

## 8.1. Screen Layout

When an IP scan has been completed, the acquired image is displayed on the Scan window as shown in Figure 8.1.

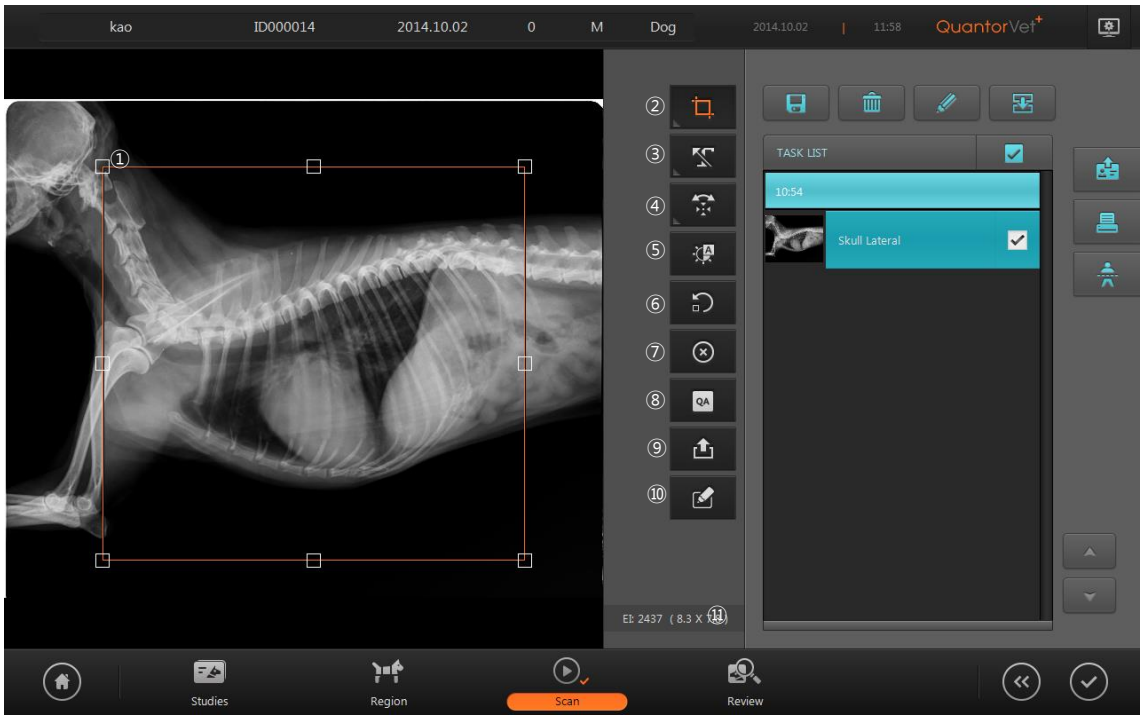



**Figure 8.1 Image**

① ROI Box: A tool for cropping the valid region of the scanned image.
② ROI: ROI-related tools
③ Marking: Add markings on the image.
④ Rotate Flip: Rotate/flip the image.
⑤ Auto Window: Automatically adjust the image brightness and contrast.
⑥ Repeat: Scan the image again.
⑦ Reject: Reject the image.
⑧ QA: Bring up tools for adjusting image details.
⑨ Send Image: Transmit the image.
⑩ Image Comment: Write image comment
⑪ Exposure Index: Show the exposure index value of the scanned image.

## 8.2. *ROI*

When a scan is completed, the image is displayed and the ROI Box of the predefined size for each scanned region is automatically displayed as shown in Figure 8.1. When you drag the ROI Box to the desired location and double-click the ROI Box or click on the ROI button, the ROI is cropped and fitted to the screen as shown in Figure 8.2. To adjust the size of the ROI Box, drag the small rectangles at each corner of the ROI. When transmitting or printing the image, only the ROI are used.

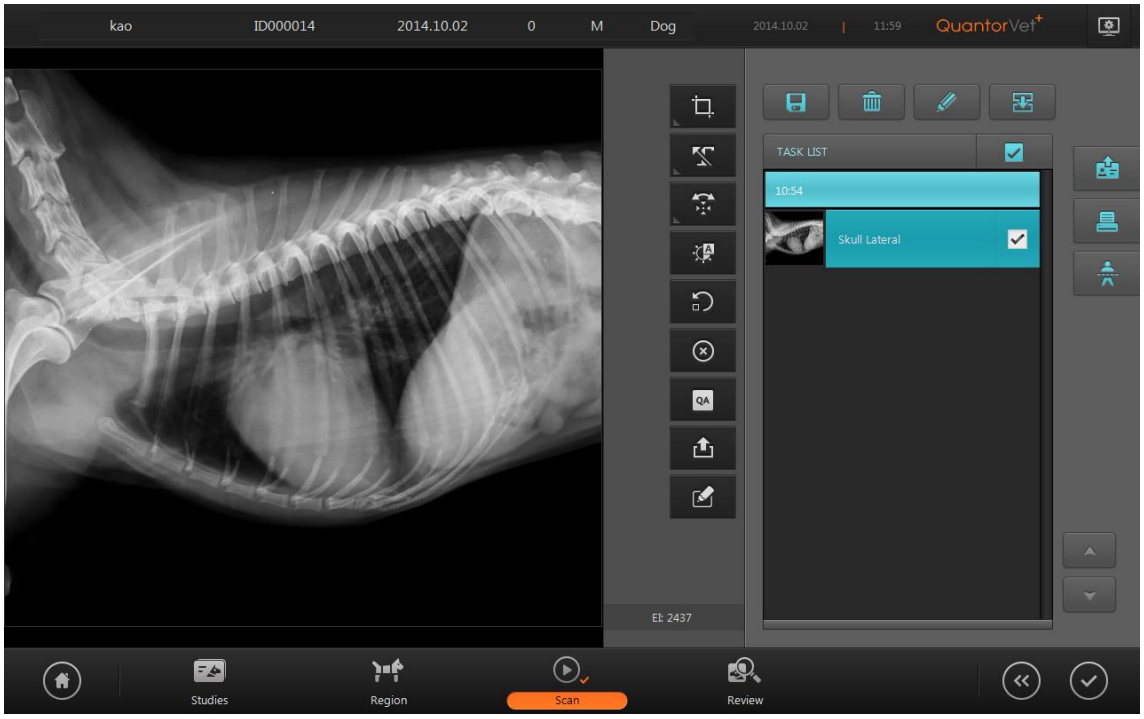



**Figure 8.2 ROI Cropped Image**

To bring up the ROI Box again, double-click on the image or click on the ROI button. When you click on the ROI button, the film sizes listed below will be displayed on the screen. When you select one of the given sizes, the ROI Box will be adjusted to that size.

- 8 x 10, 10 x 12, 14 x 14, 14 x 17, 10 x 8, 12 x 10, 17 x 14

## 8.3. *Marking*

The Marking feature is used to add markings on the image. Markings can be added to the image by selecting a predefined marking or manually typing in text.

***Add Predefined Markings***

① Click on the Marking button.

② Select a marking.

③ Click on the image.

Predefined markings can be edited in Settings under [Overlay-Marking].

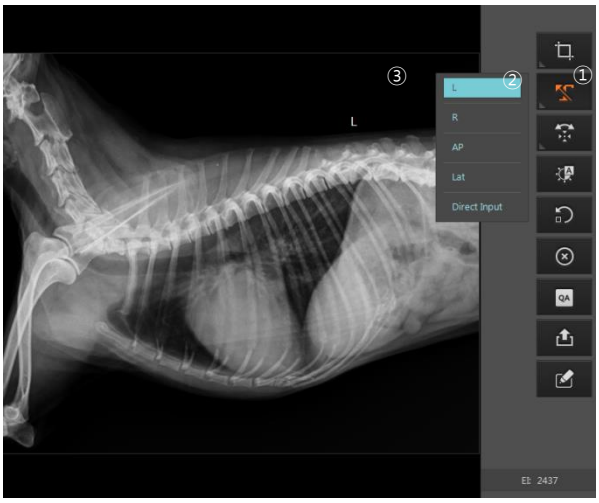



**Figure 8.3 Add Predefined Markings**

***Manually Enter Markings***

① Click on the Marking button.

② Select Direct Input.

③ Click on the position where you want to add the marking and a text input box will appear. Enter your text. Click outside the text input box when you are done.

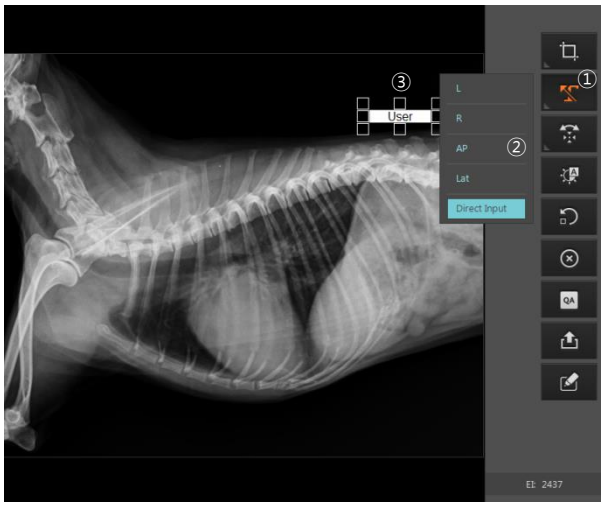



**Figure 8.4 Manually Enter Markings**

## 8.4. *Rotate/Flip*

Used to rotate or flip images.

| Icon | Action |
|---|---|
| | Rotate Left |
| | Rotate Right |
| | Flip Horizontally |

| | |
|---|---|
| | Flip Vertically |

## 8.5. *Auto Window*

Automatically adjust the image brightness and contrast.

## 8.6. *Retake*

Used when the quality of the scanned image is insufficient and requires a rescan. Remember that the current image will be deleted.

## 8.7. *Reject*

When the quality of the scanned image is insufficient, Reject preserves the current image with a “Reject” marking without rescanning. When the Reject button is clicked, a “Reject’ marking is added on the upper left corner of the image as shown below, and a “Reason” input field appears on the screen. Type in the reason for rejection, and click outside the input box when you are done. You can cancel a rejection by clicking the Reject button again.

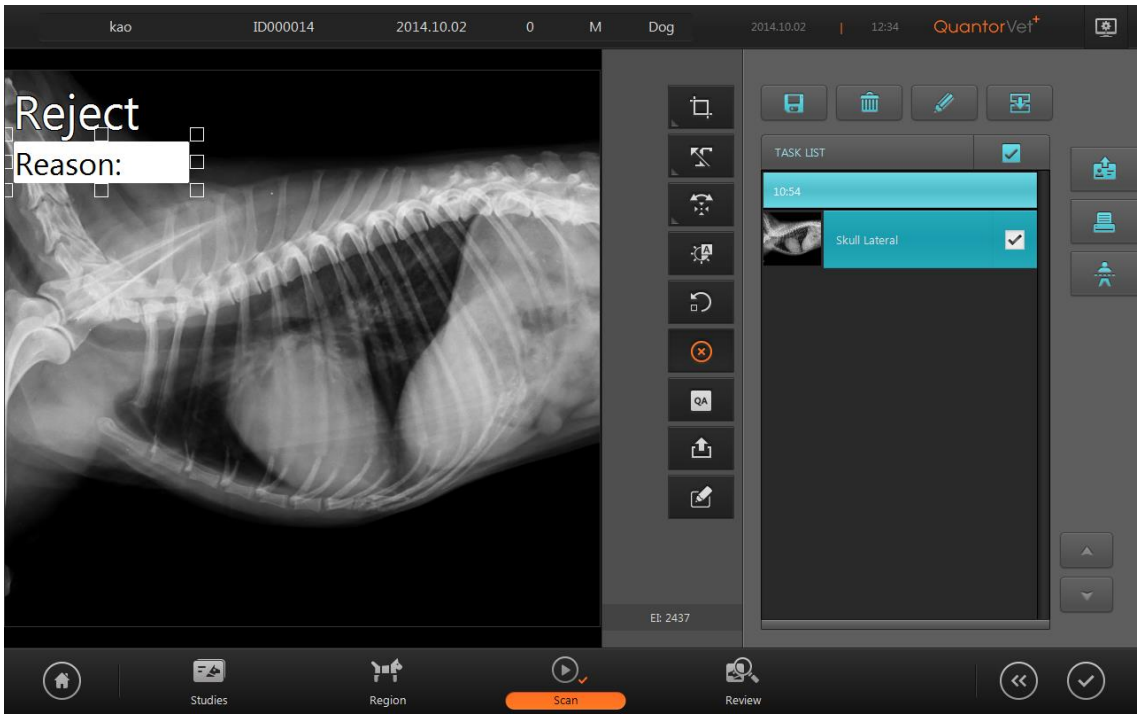



**Figure 8.5 Reject**

## 8.8. *QA – LUT Curve*

Used to adjust the LUT Curve of the image. Adjusting the image requires expert knowledge about images. Adjusting the image without proper knowledge may result in lower image quality.

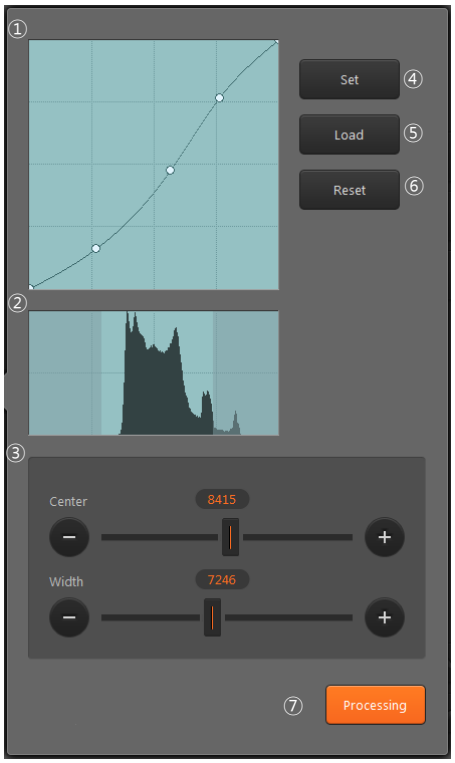
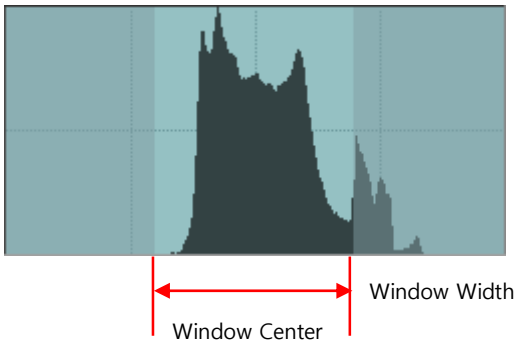



**Figure 8.6 LUT Curve**

① LUT Curve: LUT curve applied to the image. A default curve for each region is provided. The user can adjust the curve to their preference. To adjust the curve, set a control point and drag the curve using the mouse. To add a new control point, click on the line using the mouse. A control point can be removed by dragging it outside the box.

② Histogram: Shows the histogram of the image. The bright region at the center is the region currently displayed on the screen. The left part of the histogram indicates the frequency where X-ray penetration level is low and image is bright. The right part of the histogram indicates the frequency where X-ray penetration level is high and image is dark. Images have low pixel values in bright regions and high pixel values in dark regions.

③ Window Center / Width: Used to adjust the window center and width of the image. The window center is adjusted when you drag the image up or down, and window width is adjusted when you drag the image left or right. Dragging the sliders has the same effect as dragging the image.




④ Set: Set the curve and window value adjusted by the user as the default value for images of the current region.

⑤ Load: Load and apply default curves and window values of the current region.

⑥ Reset: Reset curve.

⑦ Processing: Go to Image Processing Filters screen.

## 8.9. *QA – Image Processing Filters*

Used to adjust image processing filters. Adjusting the image requires expert knowledge about images. Adjusting the image without proper knowledge may result in lower image quality.

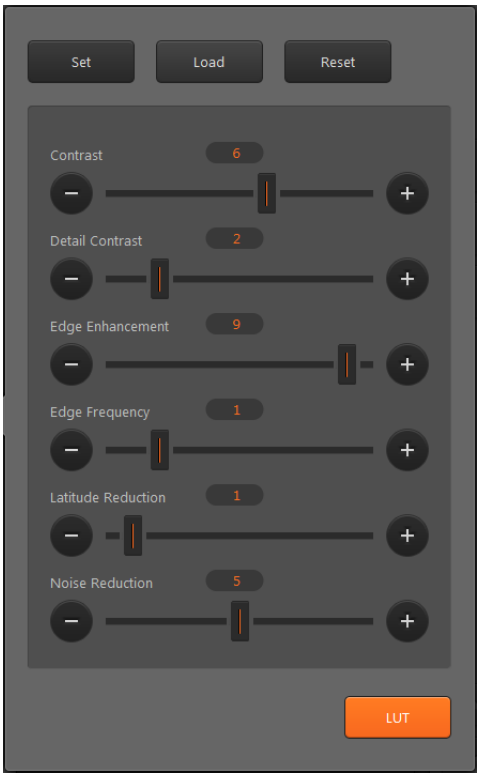



**Figure 8.7 Image Processing Filter**

① Contrast: Increases the image's contrast. The level can be adjusted from 0 to 10. Higher levels increase the intensity. Filter is not applied when 0 is selected.

② Detail Contrast: Increases the contrast in regions of the image with low contrast. The level can be adjusted from 0 to 10. Higher levels increase the intensity. Filter is not applied when 0 is selected.

③ Edge Enhancement: Enhances edges. It is used to increase visibility of blood vessels or small calcifications. The level can be adjusted from 0 to 5. Higher levels increase the intensity. Filter is not applied when 0 is selected.

④ Edge Frequency: Designates the range of the edges to emphasize. The level can be adjusted from 0 to 5. Lower level emphasizes the smaller edges. Higher levels emphasize the bigger edges.

⑤ Latitude Reduction: Compresses the low frequency regions to improve the overall visibility of the image. The level can be adjusted from 0 to 10. Higher levels increase the intensity. Filter is not applied when 0 is selected.

⑥ Noise Reduction: Reduces the noise in the image. The level can be adjusted from 0 to 10. Higher levels increase the intensity. Filter is not applied when 0 is selected.

⑦ Set: Set the filter values adjusted by the user as the default value for images of the current region.

⑧ Load: Load and apply filter values of the current region.

⑨ Reset: Reset filters.

⑩ LUT: Go to LUT Curve adjustment screen.

## 8.10.*Send Image*

Immediately transmits current image to the image server designated in Settings. If [Network/Export – Options – Show Destination] is checked under Settings, a dialog box for choosing the destination will be displayed as shown in Figure 8.8 and the user can designate a destination.

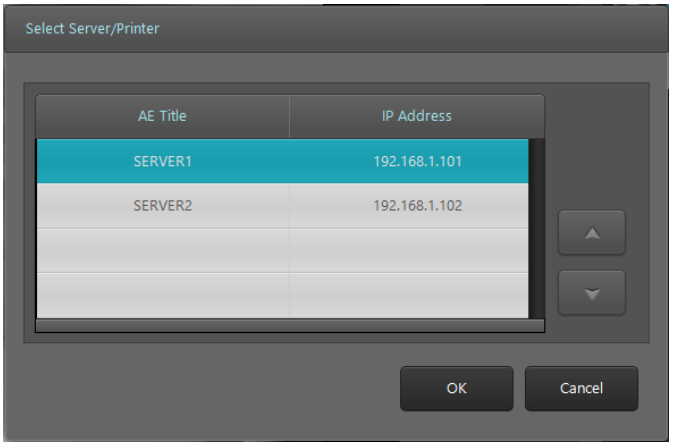



**Figure 8.8 Destination Select**

## 8.11.*Image Comment*

Add a memo about image-related findings and extra information.

## 8.12.*Exposure Index*

Exposure Index is an approximate indicator of the dose that reaches the image receptor. 3DISC's Exposure Index is calculated by following equation.

$$\mathrm{EI} = 1000 \times \log\frac{X}{K_0} \quad (K_0=0.01mR,\ X(mR))$$

Recommended value of Exposure Index is 2000, and its acceptable tolerance is +- 10%. For example, 2500 of Exposure Index means overdose and 1500 of Exposure Index means underdose.

- 1800 < Dose < 2200: Dose is optimal
- Dose < 1800: Dose is too low
- Dose > 2200: Dose is too high

# 9. Task List

## 9.1. Screen Layout

The Task List is a list of scans to be performed. Tasks are group by studies, and arranged in chronological order. The user can select the desired region and perform a scan. The Task List consists of a list of studies, and each study consists of a list of tasks. The check boxes located to the right of the task bar is used to select tasks.

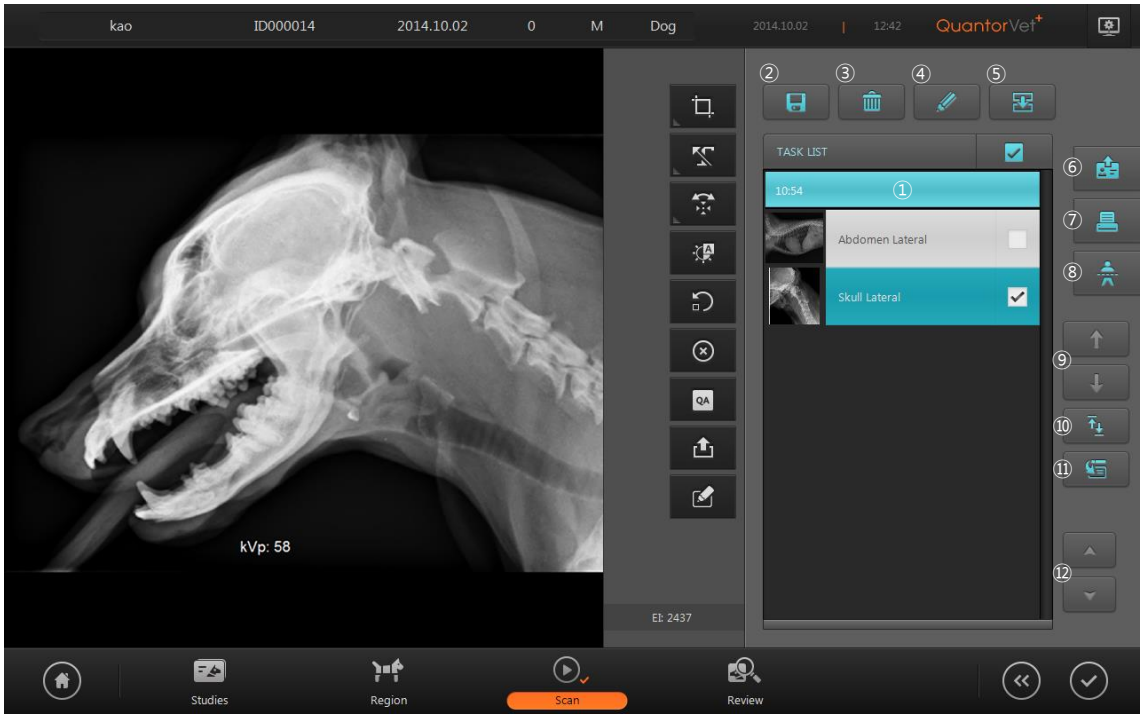



**Figure 9.1 Task List**

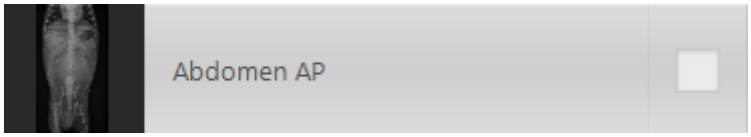
① Task Bar
② Add Preset
③ Delete
④ Edit
⑤ Send Study
⑥ Print
⑦ Stitch
⑧ Change order
⑨ Swap
⑩ Move

⑪ Page Up/Down

## 9.2. *Task List*

Task List consists of Study-Task tree structure. Study Bar is shown below, and it shows Study Date and Study Description.

Task Bars are shown under the Study Bar. Task Bar is shown below, and it shows Thumbnail Image, View Position and check box.




All Task Bars can be selected or deselected by checking the box in Task List.

## 9.3. *Tool Button*

| Icon | Title | Action |
|---|---|---|
| | Add Preset | Add the selected study to the preset. When added to the preset, the added study will be displayed on the Preset List in the Region Selection screen. |
| | Delete | Delete selected tasks |
| | Edit | Show/hide Move and Switch buttons |
| | Copy | Copy selected task. |
| | Send Study | Transmit the selected study. Destination of the transmission can be added in Settings |
| | Print | Print the selected images using a DICOM printer or a Windows printer. |

| | | |
|---|---|---|
| | Stitch | Used to stitch multiple images into one when long bones are scanned. To stitch images, all the images must have the identical scan resolution. Images scanned in SD resolution and in HD resolution cannot be stitched. Up to three images can be stitched into one. |
| | Order change | Change the order of the tasks. Change the order of the task by pressing the Up/Down buttons. |
| | Swap | Swap the images of two tasks. The button is only activated when two tasks are selected. |
| | Move | Move selected image to the next study. By clicking this button, window moves to study list. In order to move the image, select the study you wish to move then click scan button of double click it. It enables to move to the study of a different patient. |
| | Dental | Dental button becomes activated when the images are acquired using Veterinary Dental Cassette. Each dental image is extracted individually when the Dental button is clicked. |

## 9.4. *Stitch*

The Stitch function is optional. A Stitch Dongle is required to use the Stitch function. When stitching begins, a screen shown in Figure 9.2 will be displayed on the screen and the selected images will be displayed vertically according to the order in the Task Bar. When you adjust the position and angle of the images and begin stitching, the two images will be stitched into one and added to the Task List.

**Figure 9.2 Stitch**

### 9.4.1. *Tool Bar*

| Icon | Title | Action |
|---|---|---|
| | Zoom | Used to zoom in and out of the image. Drag the mouse over the image to control the zoom. It does not zoom in/out on a single image and zooms in/out on the entire screen. |
| | Pan | Pan the image. Drag the mouse over the image to control the zoom. The selected image pans separately |
| | Fit To Page Size | Adjust zoom to fit the image to the height of the screen. |
| | Fit To Page Width | Adjust zoom to fit the width of the screen |
| | Clip | Show/hide clip adjustment line in the image. Clip lines are displayed as dotted lines. Drag the dotted line using the mouse to clip the desired region |
| | Show Guide Line | Show/hide horizontal dotted line to check horizontal level of the scanned image. The position of the guide line can be adjusted by dragging it using the mouse |
| | Rotate Left | Rotate the selected image counter-clockwise. |

| | | |
|---|---|---|
| | Rotate Right | Rotate the selected image clockwise. |
| | Rotate Angle | The angle to rotate the image.. |
| | Reset | Reset images |
| | Cancel | Return to the previous screen. |
| | Stitch | Stitch images and return to the previous screen. |

## 9.5. *Print*

Windows printers and DICOM printers are supported. The printed page can be previewed on the left part of the screen.

**Figure 9.3 DICOM Print**

- Printer Type: Select printer type.
  - DICOM Printer
  - Windows Printer

- Layout: Select the layout of the image to be printed on film or paper.
  - 1x1 ~ 3x3 formats

- Film Size: Select standard DICOM film size.
  - 8INx10IN
  - 10INx12IN
  - 10INx14IN
  - 8INx10IN
  - 11INx14IN
  - 14INx14IN
  - 14INx17IN
  - 24CMx30CM
  - 24CMx24CM

- Orientation: Select film orientation.
  - Portrait: Uses portrait orientation.
  - Landscape: Uses landscape orientation.

- Destination: Select DICOM printer.
- Real Size: Print in real size
- Print: Start printing.
- Stop: Stop printing.
- Cancel: Close dialog box.

When a Window printer is selected, the screen changes as shown in Figure 9.4.

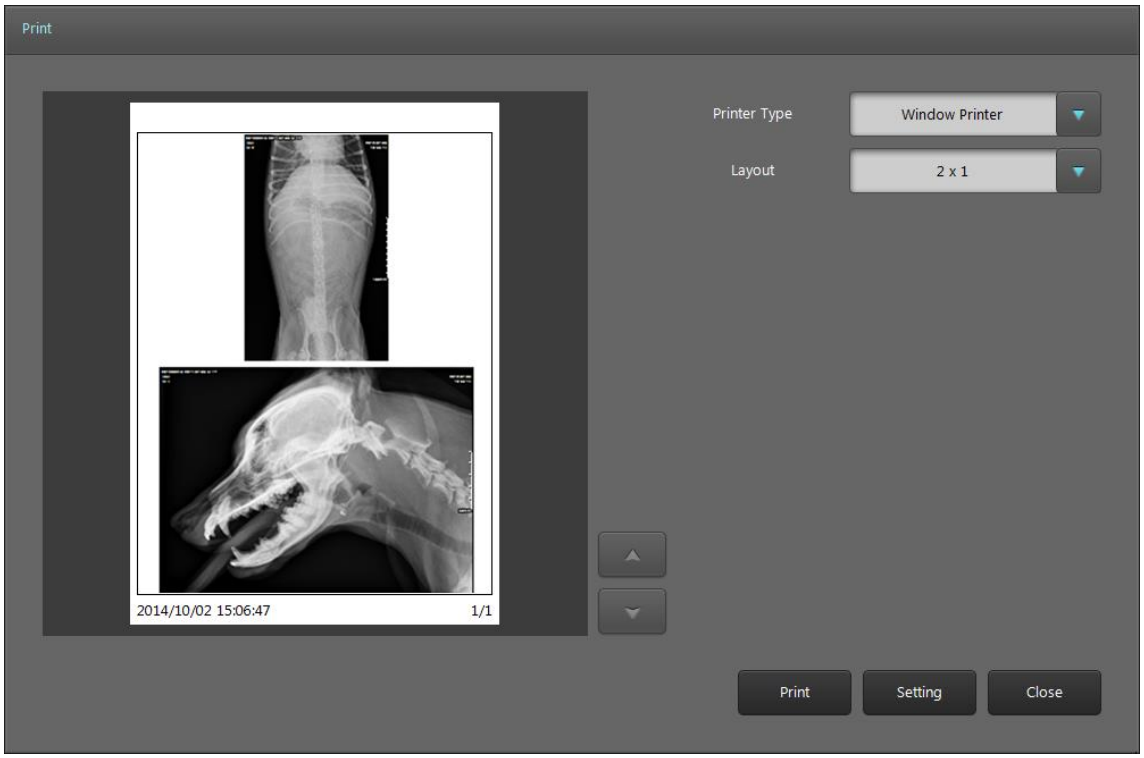



**Figure 9.4 Window Printer**

- Setting: Display the Print Setting screen.

# 10. Review

Review screen offers the identical functions as a PACS Viewer. It supports various image comparison, processing and measurement tools for performing a diagnosis.

## 10.1. Screen Layout

Screen layout of the Review is as Figure 10.1.

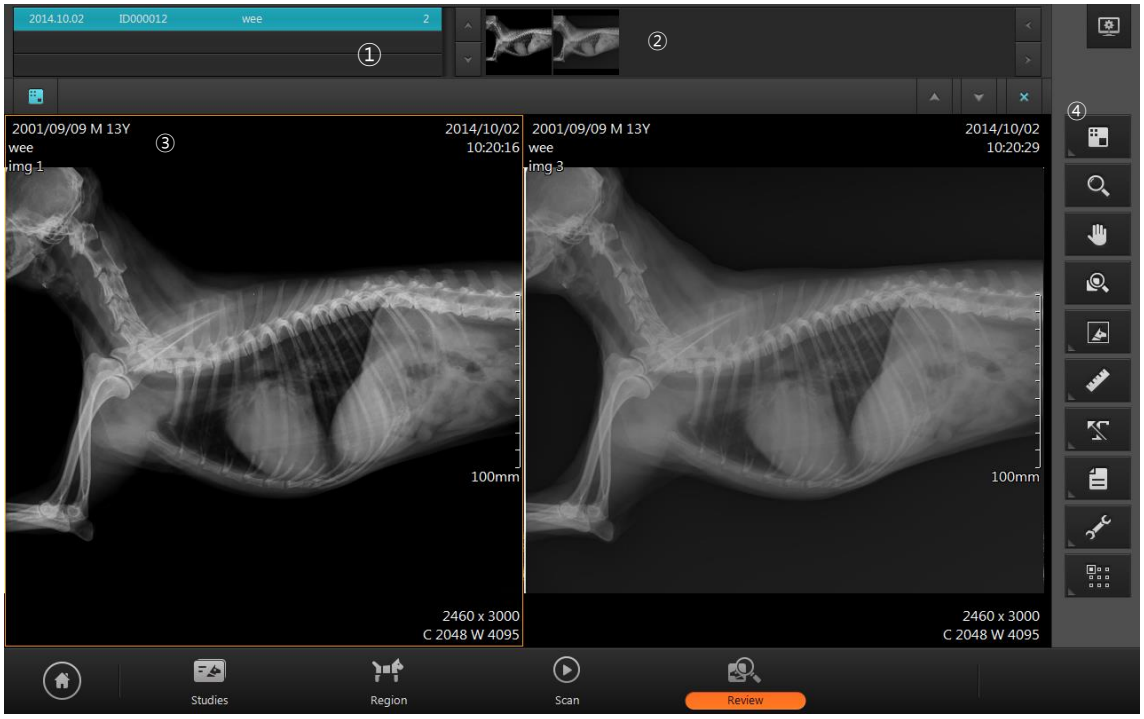



**Figure 10.1 Review Screen**

① Study list: Opened study list
② Thumbnail bar: Display thumbnail images of selected studies in study list.
③ Image display area
④ Toolbar

## 10.2. Open Study

In order to use Review window, select study and open it in Review window.

**Open in Study List window**

- Select studies in study list.
- Click review button in right side of study list.
- Then, selected studies are listed in study list in Review window, and the first image is displayed.

**Open in Scan window**

- Click Review button in navigation bar in Scan window.
- Then, the image displaying in Scan window is displayed in Review window.

## 10.3. *View*

The screen displaying the image consists of multiple views. Each view consists of multiple images. The user can customize the view layout and image layout according to their needs.

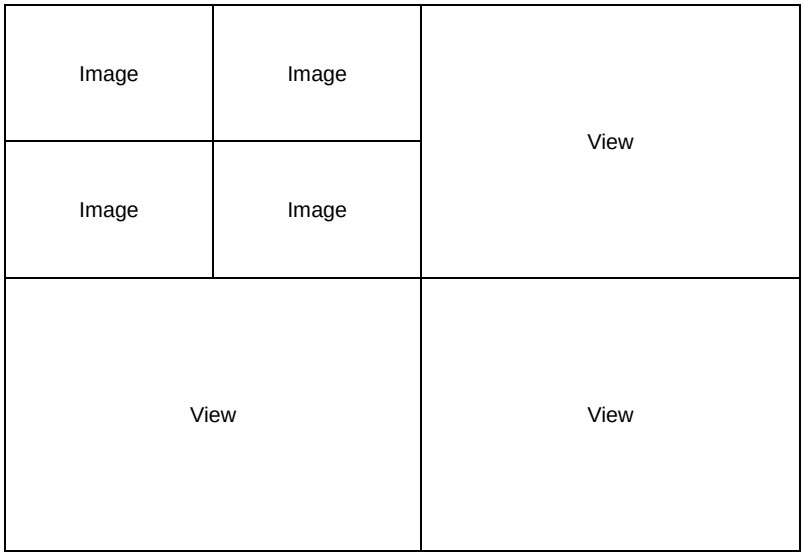



**Figure 10.2 View – Image Layout**

To display an image in the view, all you have to do is simply drag the image from the Task Bar. When an image is dragged from the Task Bar, only the image is displayed in the view. When a Study Bar is dragged, all the images included the study are displayed in the view.

Caption bar is located at top of the View

**Figure 10.3 View Caption Bar**

① Image Layout: Change image layout. When you click on the Image Layout button, a 3x3 grid shown in Figure 10.4 will appear on the screen. Select your desired layout. The largest image layout available 3x3.

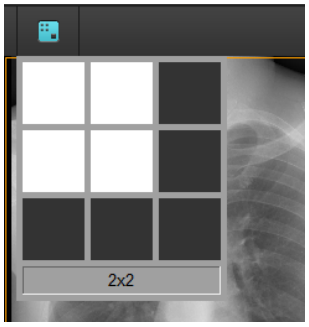



**Figure 10.4 Image Layout**

② Page Up: Go back to the previous page.

③ Page Down: Go to the next page.

④ Close: Close all images.

## 10.4. *Tool Bar*

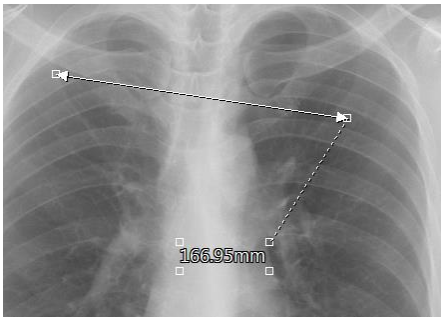
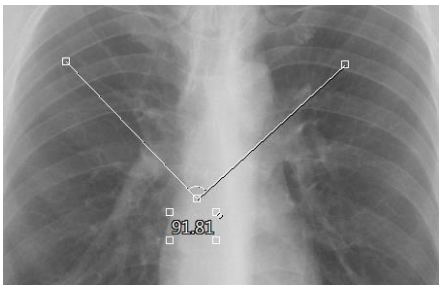
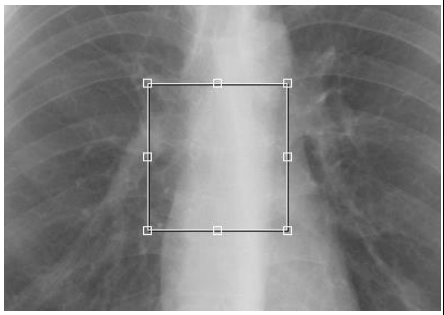
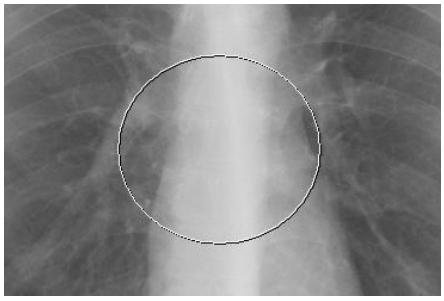
| Icon | Title | Action |
|---|---|---|
| | View Layout | Change the layout of the view |
| | Zoom | Used to zoom in and out of the image. Drag the image left, right, up, or down using the mouse. |
| | Pan | Pan the image. Drag the image left, right, up, or down using the mouse. |
| | Magnifier | Mouse is changed to Magnifier mode. Use Ctrl key to change the zoom ratio and use Shift key to change the magnifier size |
| | Image | Open image manipulation tools for rotating, flipping and inverting images |

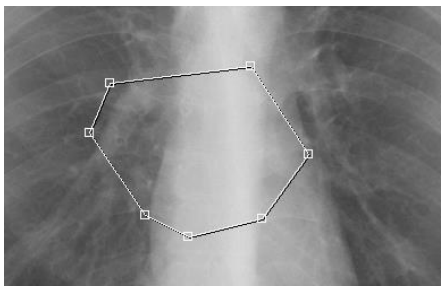
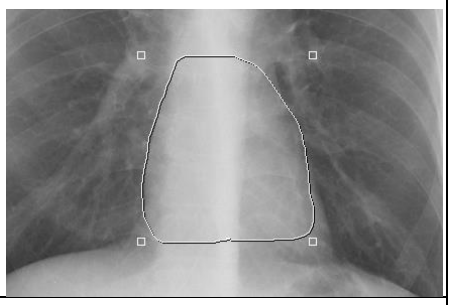
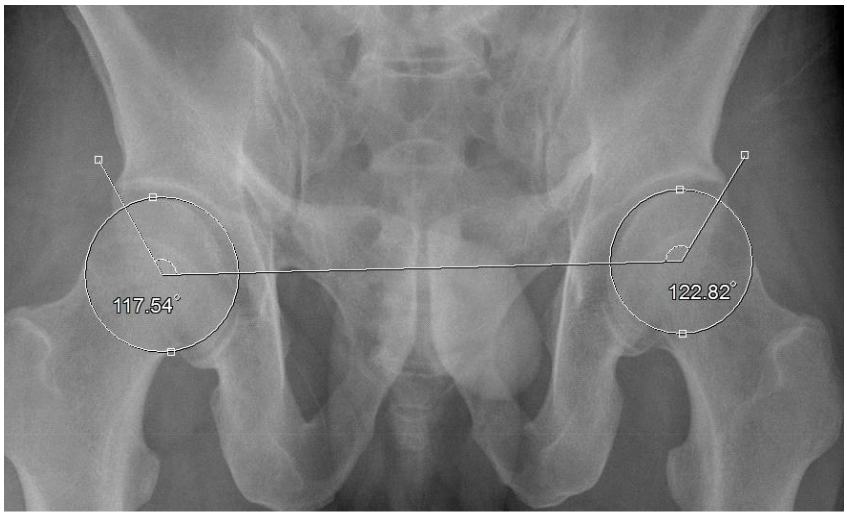
| | | |
|---|---|---|
| | Measure | Provides various measurement tools for measuring distance and angle |
| | Marking | Provides marking tools |
| | File | Provides file tools |
| | Tools | Provides other tools |
| | Apply | Designate the range in which image adjustments will apply. |

## 10.5.*Image Processing Tool Box*

| Icon | Title | Action |
|---|---|---|
| | Rotate Left | Rotate the selected image to counterclockwise by 90 degree. |
| | Rotate Right | Rotate the selected image to clockwise by 90 degree. |
| | Flip Horizontally | Flip the selected image horizontally. |
| | Flip Vertically | Flip the selected image vertically. |
| | Reset image to initial state | Reset the image to initial state. |
| | Negative image | Inverse the image |
| | Fit to page size | Scaling the image fit to the page size. |
| | Original Size | Display the image without scaling. Pixel size of the image and monitor matches 1 to 1. |
| | Real size | Scaling the image to real size. Monitor calibration is required to use this function. |

## 10.6.*Measurement Tool Box*

| Icon/Title | Description |
|---|---|
| <br>Distance | Measures distance. Click the start and end point of the measurement. A straight line is displayed between the two points and the measurement value is displayed at the end of the straight line. You can move the measuring line by dragging it. You can move either one of the two control points by dragging them with your mouse. You can also move the position of the measurement values by dragging it with your mouse.  |
| <br>Angle | Measures angle. Click on the center point of the angle you wish to measure, and then click on two control points. You can move both lines at once by dragging. You can also move either one of the two control points. You can also move the position of the measurement values by dragging them with your mouse  |
| <br>Rectangle | Draws a rectangle. Click the mouse at the desired position of the upper left corner of the rectangle, and then drag the mouse to the desired position of the lower right corner of the rectangle and release the mouse button. Click on an area within the rectangle to move it. Drag the control points to resize the rectangle.  |
| <br>Ellipse | Draws an ellipse. Click the mouse at the desired position where the top and left-most point of the ellipse would intersect, drag the mouse toward the bottom right and release the mouse after reaching a desired size and shape. Click on an area  |

| | |
|---|---|
| | within the ellipse to move it. Drag the control points to resize the ellipse. |
| <br>Polygon | A control point is added every time you click the mouse. Double-click when you are done drawing the polygon. Click on an area within the polygon to move it. Drag the control points to change the corners of the polygon.<br>  |
| <br>Free Draw | Creates a free draw selection. Click and drag the mouse to the desired shape. Release the mouse when you are done drawing. You can click inside the selection to move the free draw selection<br>  |
| <br>Norberg Angle | Measures the Norberg angle and available when B dongle is attached to PC.<br>Direction:<br>1. 1st Click: top of left femoral<br>2. 2nd Click: bottom to left femoral<br>3. 3rd Click: top of right femoral<br>4. 4th click: bottom of right femoral<br>5. 5th click: left craniodorsal rim of the acetabulum<br>6. 6th click: right craniodorsal rim of the acetabulum<br>  |

VHS
Angle(Vertebral Heart Size)

Measures the VHS and available when B dongle is attached to PC

1. Mouse clicking on image will show up 4 lines.
2. Measure Long Axis (A): Move the crossing A line from crania to the apex of the heart.
3. Measure Short Axis (B): Move the crossing B line to widest part of the heart on an axis perpendicular to the long axis.
4. Compare to vertebrae: The other two lines are same length of the crossing A and B line. Starting from the cranial edge of the T4 vertebral body, measure the length of the axes by the number of vertebrae. Measure to 0.1 of a vertebral body. The vertebral heart size is the sum of the length of the short and the long axes in vertebrae (VHS = long + short =5.1 + 4 = 9.1)

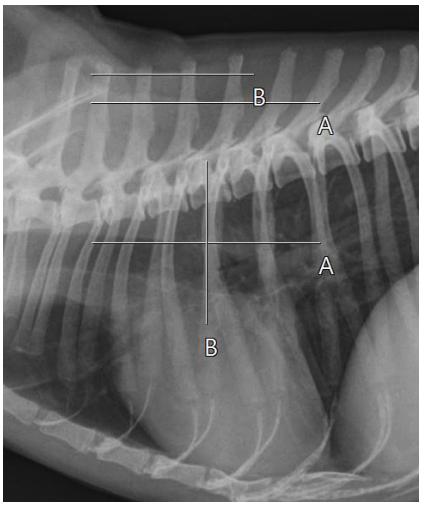



Figure 1

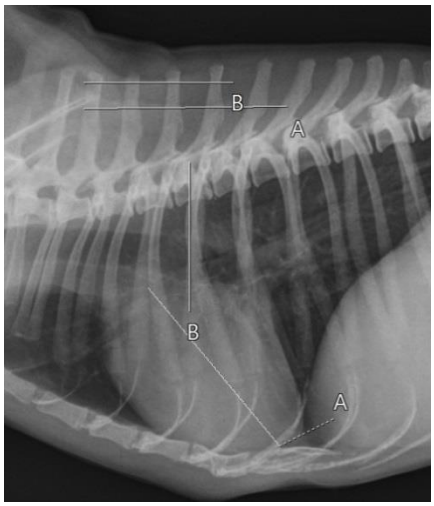
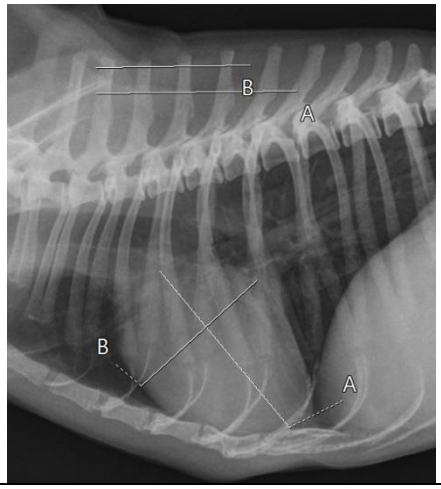
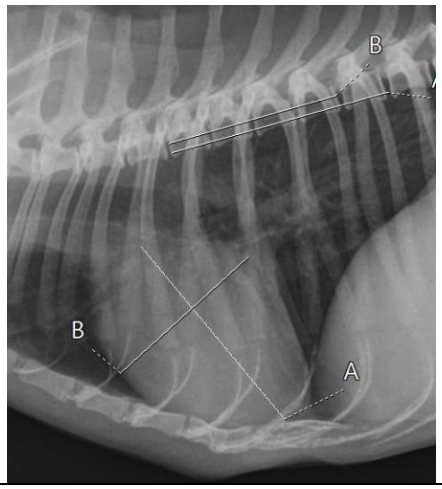
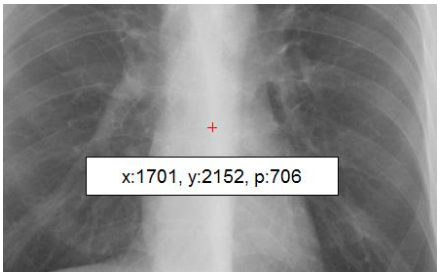



Figure 2



| | Figure 3 Figure 4 |
|---|---|
| Pixel Value | Measures pixel value. Click and drag the mouse and the coordinates (x, y) and pixel values (p) of the pixel at the cursor position will be displayed on the screen.   |
| Profile | Profile: Draw a straight line in the same manner as measuring a distance, and a profile dialog box will be displayed automatically. 7. Distance: Distance between two points<br>8. Start Point: Start point information<br>9. End Point: End point information<br>10. Min: Minimum value<br>11. Max: Maximum value<br>12. Mean: Average value<br>13. Current Value: Pixel value of the current position when the mouse was clicked over the graph |
| Line Color | Changes the color of the line. |

## 10.7.*Marking Tool Box*

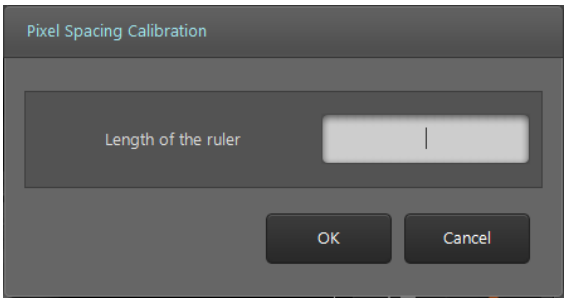
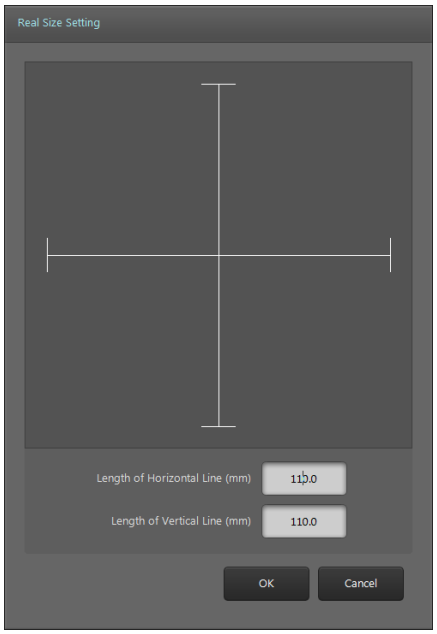
| Icon | Title | Action |
|---|---|---|
| | Arrow | Click two point in the image, then the line is generated with the arrow mark in each end. You can move the line by dragging the line or arrow by dragging the arrow. |
| | Text | Text edit box is generated by clicking the image where you wish to add the text. Add the text in the box and click outside of the box. You can move the text by dragging it or edit it by double clicking it. |

## 10.8.*File Tool Box*

| Icon | Title | Action |
|---|---|---|
| | Open DICOM File | Open DICOM files. |
| | Open Image File | Open images files other than DICOM. |
| | Export | Save the image<br>(File format : DICOM, jpg, tiff, bmp) |

## 10.9.*Other Tool Box*

| Icon | Title | Action |
|---|---|---|
| | Copy to clipboard | Copies the active image to the Windows clipboard. |

| | | |
|---|---|---|
| | Pixel Calibration | Sets pixel size.<br>1. Scan a measuring tool with a determined length.<br>2. Select the scanned image and click on the Pixel Calibration button.<br>3. The following dialog box will be displayed on the screen. Enter the actual length of the measuring tool.<br>  <br>4. Click on the start point of the measuring tool over the image and start dragging.<br>5. Release the mouse at the end point of the measuring tool to complete the calibration. |
| | Monitor Calibration | It is required to know the pixel size of the monitor to display the image in real size on the monitor. Following window pops up when Monitor Calibration button is clicked.<br>  |

| | | |
|---|---|---|
| | | Measure lengths of horizontal and vertical lines using the ruler and input in the window. You can use the real size function after calibration of the monitor. |
| | Region Auto Window | This function shows small box on the image if you click mouse left button. Auto window is applied to this small box area. You can change box size if you move mouse with “Shift” key down. |
| | Print | Print selected images. |

## 10.10. *Apply Range*

Sets the range in which image processing will be applied. When comparing two images, you can apply the same filters to both windows for easier comparison. Image filters that can be used with Apply Range are as follows.

- Zoom, Pan, Rotate, Flip, Window

| Icon | Title | Action |
|---|---|---|
| | Active | Active: The image that was clicked last is the active image. The active image is marked by an orange border. |
| | Select | Select: You can select multiple images by clicking on images while holding down the Ctrl key. The selected images are marked by a blue border. |
| | Study | Study: Applies image filters to all images in the study that contain the active image. |
| | All | Active: The image that was clicked last is the active image. The active image is marked by an orange border. |

# 11. Study List

## 11.1. Screen Layout

You can manage scanned images in Study List.

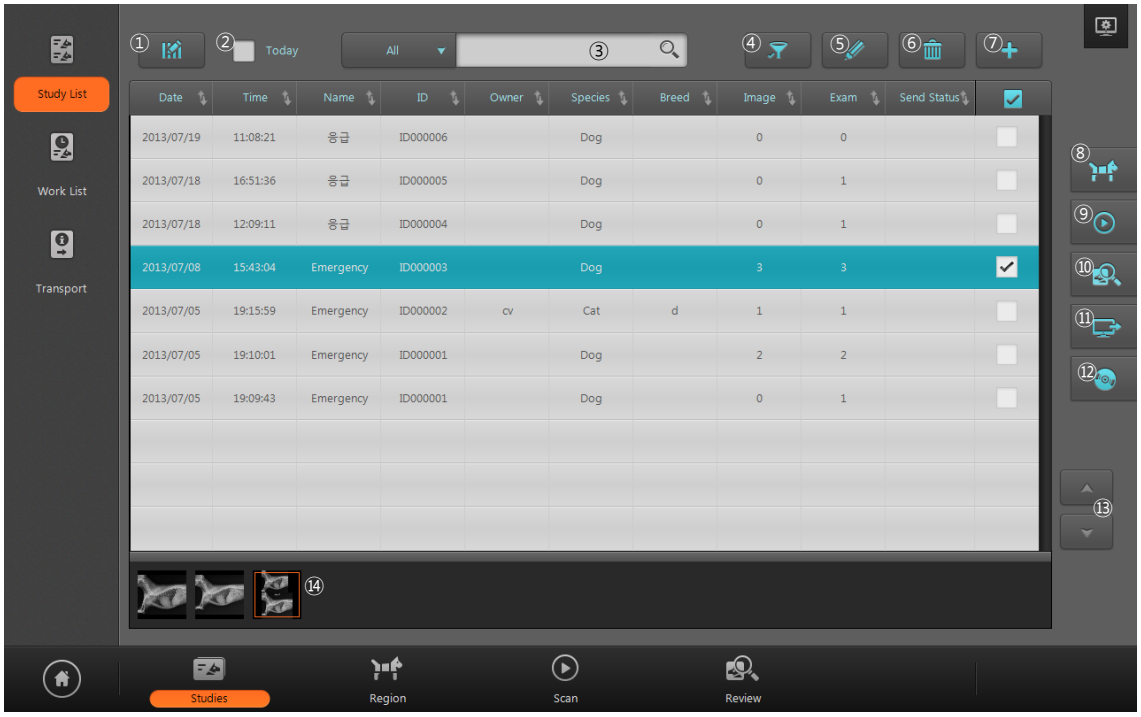
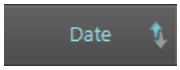
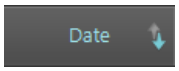



**Figure 11.1 Study List**

① Edit Column
② Today
③ Search
④ Filter
⑤ Edit
⑥ Delete
⑦ New Study
⑧ Region
⑨ Scan
⑩ Review
⑪ Send Study
⑫ Export
⑬ Page Up/Down
⑭ Thumbnail

## 11.2.*List*

- Sorting: When you click on the header of each column, the list is sorted by the information in the selected column. The sorting order changes every time the header of the column is clicked.
  - 

Sort in ascending order
  - 

Sort in descending order
- Multiple selections: You can use the check boxes to select multiple studies on the list. Use the check box in the column header to select the entire list.
- Switching Pages: You can switch pages by using the scroll wheel on the mouse or by pressing the Page Up/Down buttons.
- Change column width: To change column width, drag and move the separating line between the column headers.

The columns in the Study List are described in Table 11.1.

**Table 11.1 Study List Column**

| Column Title | Description |
|---|---|
| Date | Study date |
| Time | Study time |
| Name | Patient name |
| ID | Patient ID |
| Sex | Patient sex |
| Birth | Patient birth date |
| Age | Patient age |
| Desc | Study description |
| Ref. Phy | Referring physician’s name |
| Acc. No. | Accession number |
| Image | Number of acquired images |
| Exam | Number of tasks |
| Print Status | Print result |
| Finish Status | Image transportation result |
| Owner | Patient owner |

| | |
|---|---|
| Species | Patient species |
| Breed | Patient breed |

## 11.3.*Edit Column*

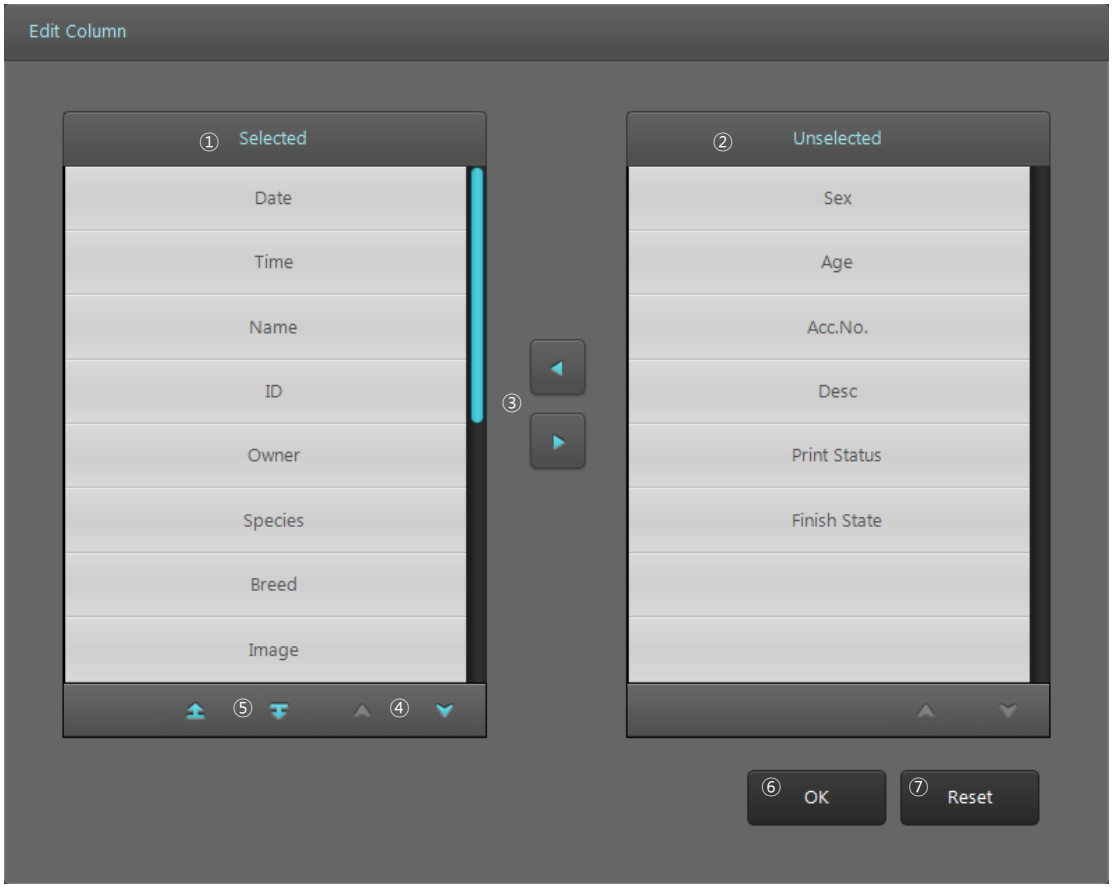



**Figure 11.2 Edit Column**

① Columns to be used in the Study List.

② Columns to be hidden in the Study List.

③ Move selected items left and right.

④ Buttons for switching pages.

⑤ Move the selected items up or down on the list to change order.

⑥ Save changes and close the dialog box.

⑦ Cancel changes and close the dialog box.

⑧ Reset the program to default settings.

## 11.4.*Search*

① Filter: Select the column to search. When a filter has not been set and All is selected, all the columns will be searched.

② Keyword: Enter the keyword to search.

③ Search: Begin search.

- Search in all columns when "**All**" filter is selected.
- Search studies after set **Date and Time** when it is selected.
- Search studies on set **Date** when it is selected.

## 11.5.*Tool Buttons*

| Icon | Title | Action |
|---|---|---|
| | Edit Column | Display a dialog box for editing the columns of the list |
| | Patient Filter | Search same patient's study with the selected study's patient. |
| | Edit | Edit the selected studies. |
| | Delete | Delete the selected studies. |
| | New Study | Add a new study |
| | Region | Open the selected study and go to the Region Selection screen. |
| | Scan | Open the selected study and go to the Scan screen |
| | Review | Open the selected study and go to the Review screen. |
| | Send Study | Send selected study to registered PACS server or DICOM Printer. |

| | | |
|---|---|---|
| | CD Burn | Export the selected studies to a CD, DVD or a local drive. |

## 11.6. *CD Burn*

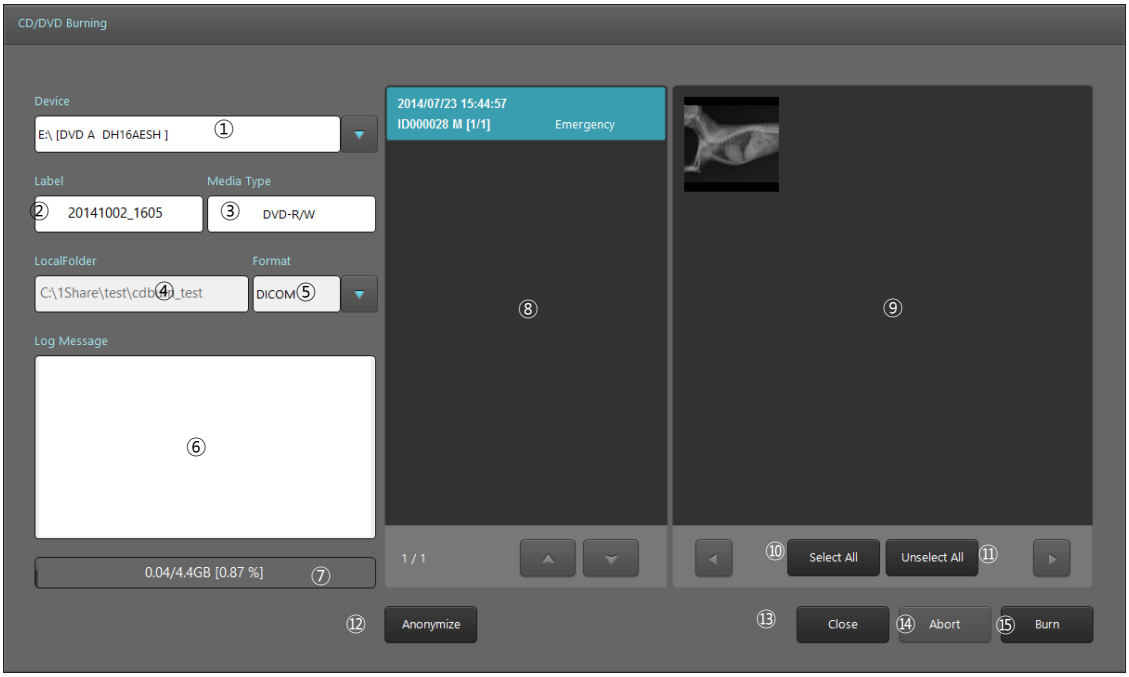



**Figure 11.3 CD Burn**

① Device: Select the storage device to export the images to. Optical disc drives connected to the PC will be listed. If you select Local, you can use other storage devices connected to the PC.

② Label: Label to be displayed on disc.

③ Media Type: Displays the type of the media inserted in the drive.

④ Local Folder: Activated only when Local is selected in the Device field. Select a destination folder to save images.

⑤ Format: Select format to save images. Supported formats are as follows.

A. DICOM

B. Bitmap: Windows Bitmap file

C. Raw: RAW file

D. Jpg: JPEG

E. Tiff: TIFF

⑥ Log Message: Shows the progress when recording to an optical disc.

⑦ Progress Bar: Shows the image export progress.

⑧ Study List: Shows the list of selected studies.

⑨ Image List: Shows images selected in the Study List. To not export a certain image, click and unselect the image.

⑩ Select All: Select all images.

⑪ Unselect All: Unselect all images.

⑫ Anonymize: Delete patient name and ID when saving as DICOM images.

⑬ Close: Close the dialog box.

⑭ Abort: Stop recording.

⑮ Burn: Start recording.

# 12. Work List

In the Work List screen, you can connect to Work List Servers of PACS or HIS systems and query the list of the studies to conduct. To use the Work List, register the Work List Server information in setting, [Network – Work List]. The way of using list, editing column and searching are identical to those of Study List.

## 12.1. Screen Layout

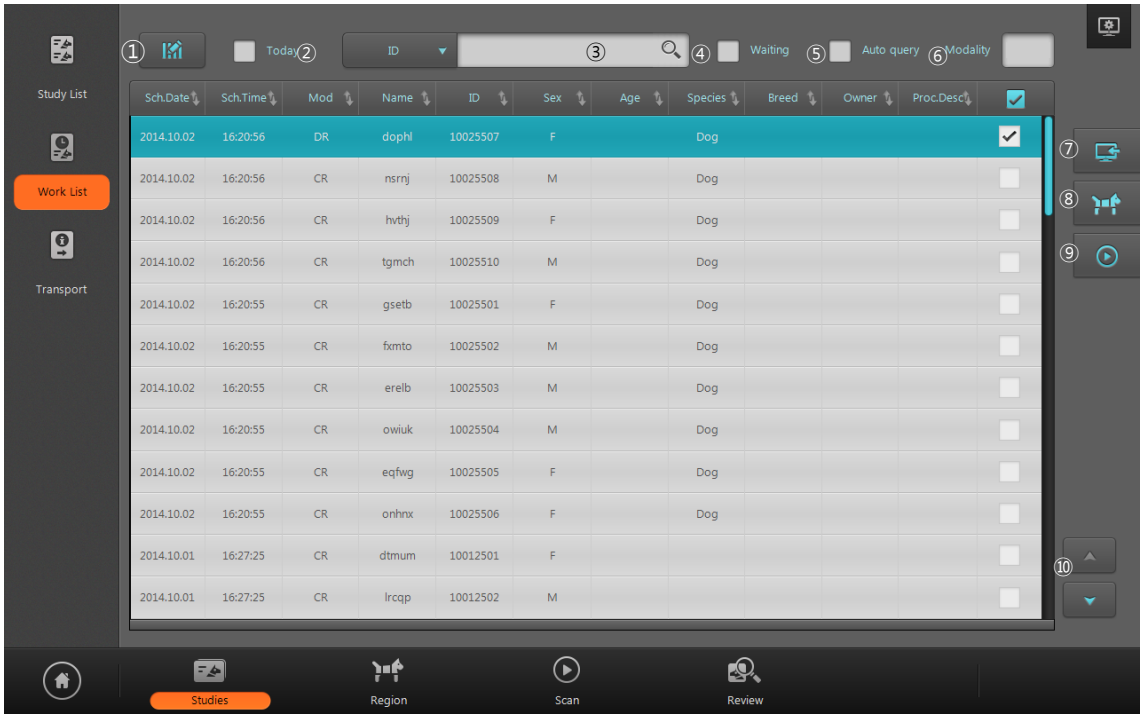



**Figure 12.1 Work List**

① Edit Column
② Today
③ Search
④ Waiting
⑤ Auto Query
⑥ Modality
⑦ Import
⑧ Region
⑨ Scan
⑩ Page Up/Down

## 12.2.*List*

Columns in Work List are described in Table 12.1.

**Table 12.1 Worklist columns**

| Column Title | Description |
|---|---|
| Sch. Date | Scheduled date |
| Sch. Time | Scheduled time |
| Mod | Modality |
| Name | Patient name |
| ID | Patient ID |
| Sex | Patient sex |
| Birth | Patient birth date |
| Age | Patient age |
| Station AE | Station AE title |
| Station | Station |
| Proc. Desc | Scheduled procedure description |
| Proc.ID | Scheduled procedure ID |
| Study UID | Study instance UID |
| Acc. No. | Accession number |
| Owner | Patient owner |
| Species | Patient species |
| Breed | Patient breed |

## 12.3.*Tool Buttons*

| Icon | Title | Action |
|---|---|---|
| | Edit Column | Display a dialog box for editing the columns of the list. Using the Work List is identical to using the Study List. |
| | Waiting | Display the list of studies that have not been scanned yet. |
| | Auto Query | Perform an auto query at a preset time. |
| | Modality | Set Modality filter for query. |

| | | |
|---|---|---|
| | Import | Import: Import selected items to the Study List. |
| | Region | Open the studies to select and go to the Region Selection screen. |
| | Scan | Open the selected study and go to the Scan screen. |

# 13. Transport

In the Transport screen, you can check the transmission results of images sent to an image server or a DICOM printer. The way of using list, editing column and searching are identical to those of Study List.

## 13.1. Screen Layout

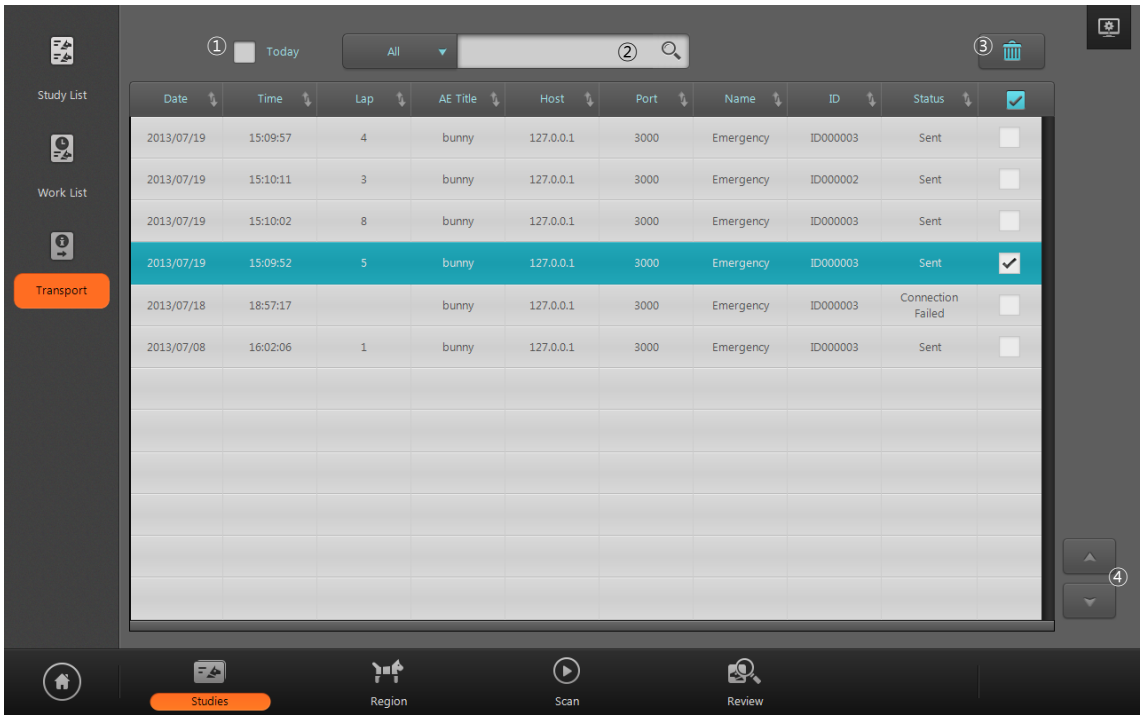



**Figure 13.1 Transport**

① Today: Search only the studies from today.

② Search: Search various criteria. Search method is identical to Study List.

③ Delete: Delete selected items.

④ Page Up/Down: Go to another page.

## 13.2. List

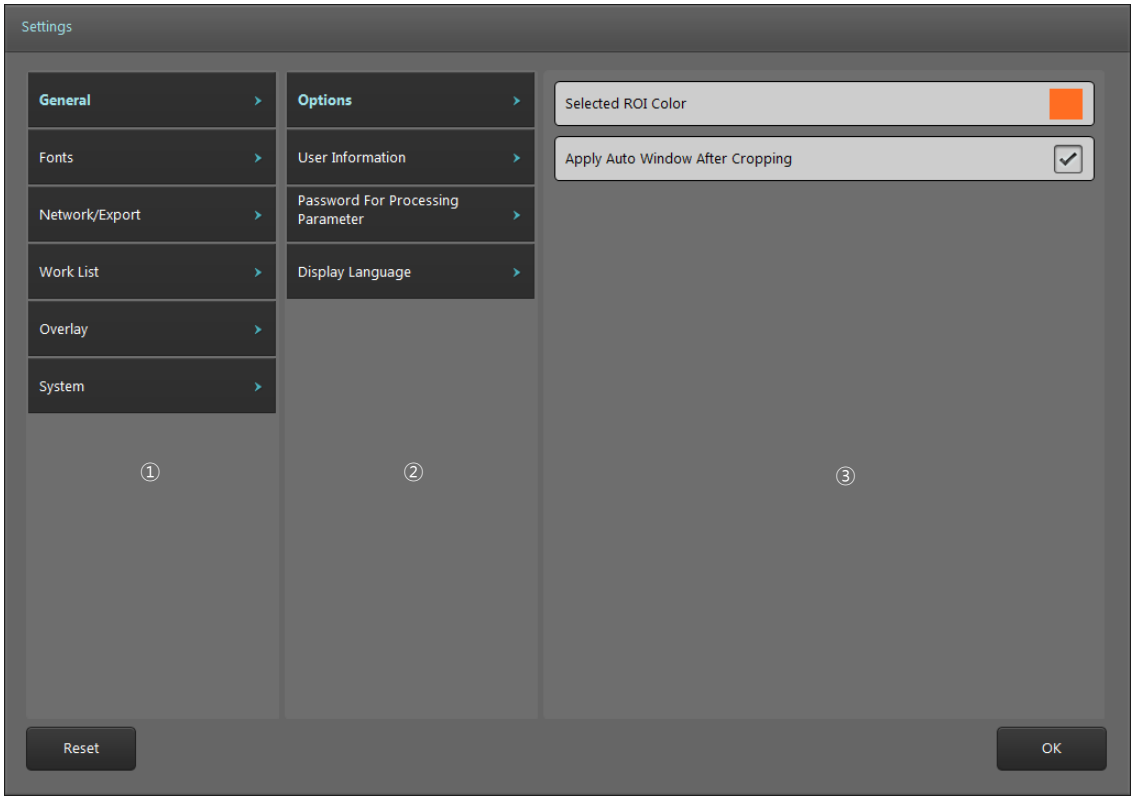
| Column Title | Description |
|---|---|
| Date | Send date |
| Time | Send time |
| Lap | Duration in seconds |

| | |
|---|---|
| AE Title | Destination AE title |
| Host | Destination IP address |
| Port | Destination port |
| Name | Patient name |
| ID | Patient ID |
| Status | Send status |

# 14. Settings

## 14.1. Screen Layout

The Setting screen consists of a main category, sub-category, and specific item. Clicking on the main category item will change the sub-category items. Clicking on the sub-category item will change the specific item in the selected sub-category. Setting values can be changed in the specific item.




① Main category item list
② Sub-category item list
③ Specific item list

## 14.2. General

### 14.2.1. Option

| Name | Description | Default Value |
|---|---|---|
| Color of ROI | Set the color of the ROI Box. Click on the item to change the color in the Color Picker. | Orange |

| | | |
|---|---|---|
| Apply Auto Window After Cropping | Set whether to automatically apply Auto Window after cropping ROI Box. | FALSE |

### 14.2.2. *User Information*

| Name | Description |
|---|---|
| Institution Name | Set hospital name. The entered value will be included in DICOM information. |
| Dept. Name | Set the department name where the system is installed. The entered values will be included in the DICOM information. |

### 14.2.3. *Password for Processing Parameter*

| Name | Description | Default Value |
|---|---|---|
| New Password | Set password. | |
| Confirm Password | Confirm password. | |
| Use password to access LUT & PROC | Activate password for accessing LUT and processing. | TRUE |
| Use password to save default value | Activate password for saving default values in the LUT and processing windows. | TRUE |

### 14.2.4. *Display Language*

| Name | Description | Default Value |
|---|---|---|
| Language | Select language. | Language selected upon product installation |

## 14.3.*Fonts*

### 14.3.1. *Common*

| Name | Description | Default Value |
|---|---|---|
| Font Name | Name of font displayed on the screen. | Segoe UI |
| Font Size | Size of font displayed on the screen. Adjustable from 8 to 12 points. | 10 |

### 14.3.2. *Marking*

| Name | Description | Default Value |
|---|---|---|
| Font Name | Name of marking font. | ARIAL |

| | | |
|---|---|---|
| Font Size | Size of marking font.<br>Adjustable from 16 to 30 points. | 22 |

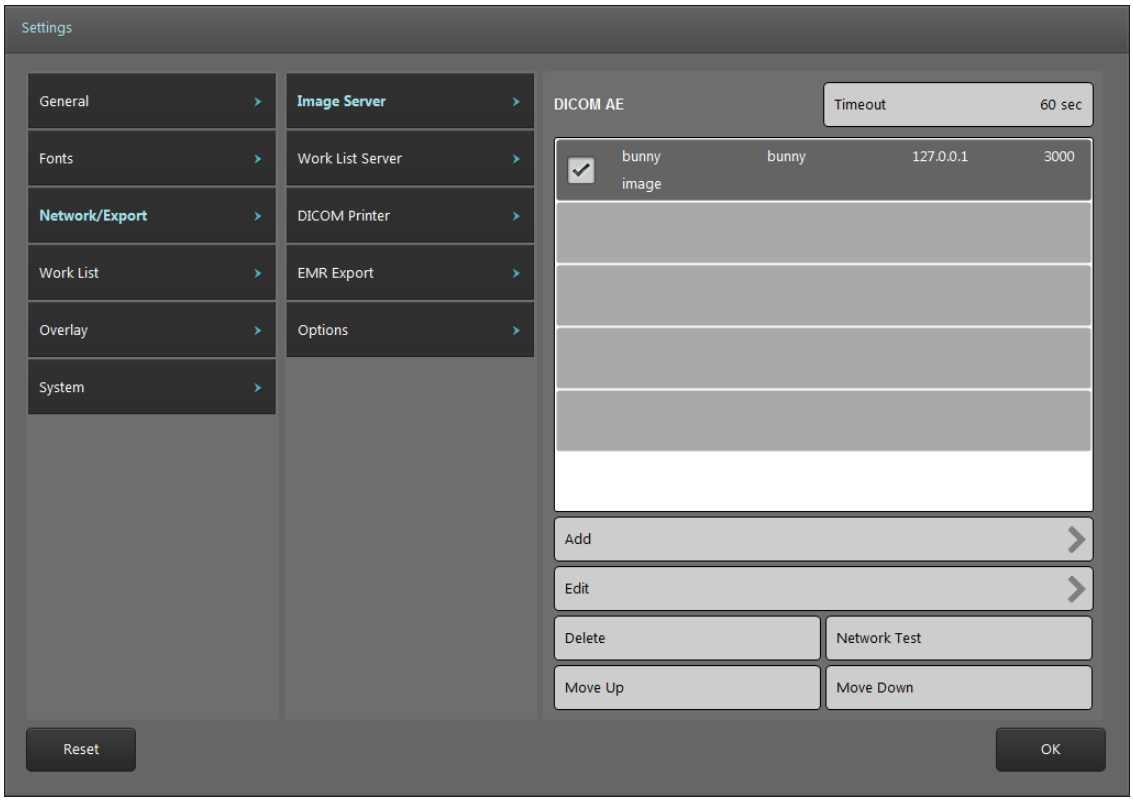
### 14.3.3. *DICOM Printer*

| Name | Description | Default Value |
|---|---|---|
| Font Name | Name of font used to print. | ARIAL |
| Font Size | Size of font used to print. Adjustable from 8 to 12 points. | 10 |

## 14.4.*Network/Export*

### 14.4.1. *Image Server*

Manages list of DICOM servers for transmitting images to.




① Add: Add an image server.

| Name | Description |
|---|---|
| Calling AE Title | Set AE title of ***Quantor.*** |

| | |
|---|---|
| Called AE Title | Set AE Title of image server. |
| IP Address | Image server IP address |
| Port | Image server port |
| Description | Image server description |

② Edit: Edit selected server. An identical screen as adding an image server will be displayed.

③ Delete: Delete the selected server.

④ Network Test: Check the connection by sending DICOM Echo to the selected server.

⑤ Move Up: Move the selected server up.

⑥ Move Down: Move the selected server down.

⑦ Timeout: Drop the connection when responses are not received within the set amount of time.

Check boxes for each item will automatically be activated once a server is added. ***Quantor*** sends images to all checked image servers according to the order on the list.

### 14.4.2. *Work List Server*

Manages Work List servers. Management method is identical to that for image servers. Multiple Work List servers can be added, but only one can be checked.

### 14.4.3. *DICOM Printer*

Manages DICOM Printers List. Management method is identical to that for image servers. Unlike adding image servers, the following additional settings are required when adding DICOM printers.

| Group | Name | Description | Default Value |
|---|---|---|---|
| Film Session | Print Priority | HIGH<br>MID<br>LOW | MID |
| | Film Destination | MAGAZINE<br>PROCESSOR | PROCESSOR |
| | Medium Type | PAPER<br>CLEAR FILM<br>BLUE FILM | CLEAR FILM |
| | Label | Label | |

| | | | |
|---|---|---|---|
| Film Box | Orientation | PORTRAIT<br>LANDSCAPE | PORTRAIT |
| | Trim | YES<br>NO | NO |
| | Size | 8INX10IN<br>10INX12IN<br>10INX14IN<br>11INX14IN<br>14INX14IN<br>14INX17IN<br>24CMX30CM<br>24CMX24CM | 14INX17IN |
| | Polarity | NORMAL<br>INVERTED | NORMAL |
| | Magnification | REPLICATE<br>BILINEAR<br>CUBIC<br>NONE | BILINEAR |
| | Border | BLACK<br>WHITE | FALSE |
| | Empty | BLACK<br>WHITE | FALSE |
| | Min | | FALSE |
| | Max | | FALSE |
| Image Box | Bits Used | 8<br>12 | 8 |

Check boxes for each item will be automatically activated once a server is added. ***Quantor*** sends images to all checked servers according to the order on the list.

### 14.4.4. *EMR Export*

EMR (Electric Medical Record) export function enables to export the image in JPG file format to designated folder in EMR. Image is exported and saved when study is finished it this function is enabled. File naming rule is as below.

*A_B_C_D.jpg (A: Prefix, B: Patient ID or Accession No., C: View Position, D: Image Serial No)*

| Name | Description | Default Value |
|---|---|---|
| Use EMR | Enable to use EMR function. | FALSE |
| path | Image save path. | |
| Filename Prefix | Prefix of the file name. | |
| Filename | Select the item to be used in file name.<br>● Patient ID<br>● Accession No, | Patient ID |

### 14.4.5. *Options*

| Name | Description | Default Value |
|---|---|---|
| Auto Send Study | Send the study automatically when the study is finished. | FALSE |
| Export To | Define the action to take when the Send Study button is clicked. You can choose from Send or Print. | Send |
| Show Destination | A Destination list is shown if the Send button is clicked in the Scan screen. | FALSE |
| Encoding Series | Set DICOM Encoding method.<br>● Single Series has Single Image<br>● Single Series has Multi Image | Single Series has Single Image |
| DICOM Character Set | Select Character Set used in DICOM.<br>● ISO_IR100<br>● ISO_IR192(UTF-8) | ISO_IR100 |

## 14.5.*Work List*

### 14.5.1. *Work List*

| Name | Description | Default Value |
|---|---|---|
| Auto Query Interval | Set the execution interval of Auto Query when using the Auto Query function on the Work List screen. | 1 min |
| S. Proc. Match with | The Work List Server records scan codes and descriptions used in the hospital to Scheduled Procedure Step ID and Scheduled Procedure Step | S. Proc. ID |

| | | |
|---|---|---|
| | Description, respectively, and transmits them. By using the QuantorOrganizer program, this information can be automatically synced to presets. Define base information to match with when syncing with presets. | |
| Keep a column sorted | Always show by the sorts when displaying query results to the screen. | TRUE |
| Use (*) for query conditions | Use * in query string. Some Work List Servers must not use * when searching. | TRUE |

## 14.6.*Overlay*

### 14.6.1. *Marking*

This section can be used to edit pre-defined markings when adding markings to images in the Scan screen. After entering text in the input field, you can perform the following actions:

- Add: Add a new marking.
- Modify: Modify an existing marking.
- Delete: Delete the selected marking.
- Move Upper: Move the selected marking up by one slot.
- Move Lower: Move the selected marking down by one slot.

### 14.6.2. *Auto Mark Margin*

Set the margins when markings are automatically added to an image. Each setting value shows margins by % compared to the width and height of the image.

| Name | Description | Default Value |
|---|---|---|
| Left | Left margin. | 10 |
| Top | Top margin. | 10 |
| Right | Right margin. | 10 |
| Bottom | Bottom margin. | 10 |

### 14.6.3. *Print Overlay Contents*

Select items to be shown in the image when printing.

### 14.6.4. *Export Overlay Contents*

Select items to be shown in the image when exporting.

## 14.7.*System*

### 14.7.1. *Exposure Input*

Allow scan values to be entered in the Scan screen. If you choose “Do not use”, the value is not displayed on the image.

| Name | Description | Default Value |
|---|---|---|
| Exposure Input | Do not use<br>kVp, mA, ms<br>kVp, mAs<br>kVp, mAs, mA<br>kVp, mAs, ms | FALSE |
| Exposure Chart | Display recommended exposure chart for each body part. | FALSE |
| Generator Type | Select the type of X-Ray generator.<br>● Hi Frequency<br>● Inverter | Hi Frequency |

### 14.7.2. *File Management*

| Name | Description | Default Value |
|---|---|---|
| Data Path | Set the destination folder for images to be stored. | Installation Folder/Database |
| Data Space | Allocates disk space for saving images. Auto deletion is activated when the allocated disk space is full. | 30GB |
| Use Auto Deletion after idle time | Set whether to use Auto Deletion and Auto Deletion intervals. | TRUE<br>60 second |
| Delete Study not Sent | Define the action to take when deleting an image that has not been transmitted.<br>● Never: Never can be deleted.<br>● Confirm: Delete after confirmation.<br>● Always: Always delete without asking. | Confirm |

### 14.7.3. *System Options*

Set other system settings.

| Name | Description | Default Value |
|---|---|---|
| Temporary Path | Set the folder for saving temporary files used in the program. | Installation Folder/Temp |
| Use On Screen Keyboard | Decide whether to use the Windows On Screen Keyboard when entering data on the screen. | FALSE |
| Display Monitor | Select the displaying monitor when more than 2 monitors are connected. | 1 |
| Review Monitor | Select the monitor for review window to be displayed. | 1 |
| Auto Scan | Reader starts scanning automatically when the cassette is inserted. | FALSE |

### 14.7.4. *Date*

| Name | Description | Default Value |
|---|---|---|
| Date Format | Set the date display format. Choose from one of the three formats below.<br>● YYYY/MM/DD<br>● DD/MM/YYYY<br>● MM/DD/YYYY | YYYY/MM/DD |
| Separator | Set the separator between year, month and day. Choose from one of the three separators below.<br>● /<br>● -<br>● . | / |

## 14.8.*Reset*

Reset restores all settings to default settings.